Ref. No. 3662
092000

ONKYO® SERVICE MANUAL

CD/MD TUNER AMPLIFIER

MODEL FR-155

Silver model

UDT	120V AC, 60Hz
UGT	220 -230V AC, 50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO®
AUDIO COMPONENTS

TABLE OF CONTENTS

Specifications ---------- 2
Caution on replacement of optical pickup ---------- 2
Protection of eyes from laser beam during servicing ---------- 3
Laser Warning Label---------- 3
Service procedures ---------- 3
Front panel view ---------- 4
Connecting to Other Components---------- 5
Remote controller ---------- 6
Setting the day of the Week and the Time---------- 6
IC Block diagram and descriptions ---------- 7
Microprocessor Connection Diagram---------- 15
Microprocessor Terminal Description---------- 16
Operation of the Microprocessor---------- 17
MD Mechanism Exploded view---------- 18~19
MD Mechanism Disassembly ---------- 20,21
MD Mechanism Reassembly ---------- 22
MD Adjustment Procedures ---------- 23~25
MD Mount View / Messages---------- 26
CD Mechanism Exploded View ---------- 27,28
CD Adjustment Procdedure---------- 29
Clock Adjustment Procdedure---------- 30
Handling of Pickup---------- 31
Chassis Exploded View Parts List---------- 32
Chassis Exploded View ---------- 33
Block Diagram---------- 35
Block Diagram (Power Supply Section)---------- 37
Schematic Diagram (Amplifire Section)---------- 39
Printed Circuit Board View 1---------- 41
Schematic Diagram (CD&Microprocessor Section)---------- 43
Printed Circuit Board View 2---------- 45
Schematic Diagram (Power Supply Section)---------- 47
Printed Circuit Board View 3---------- 49
Printed Circuit Board View Parts List---------- 51~54
Wiring View---------- 55
Packing View Parts List---------- 57

SPECIFICATIONS

General

Power supply	AC 220-230 V, 50/60 Hz AC 120 V, 60 Hz
Power consumption	63 W (220-230 V, 50/60 Hz) 82 W (120 V, 60 Hz)
(Standby)	7 W
(Energy Save)	1.5 W
Clock precision	monthly error: ±30 seconds (at 25 degrees Celsius)
Dimensions (W × H × D)	205 × 154 × 356 mm 8-1/16" × 6-1/16" × 14"
Weight	5.5 kg, 12.1 lbs

Amplifier

Power output	2 × 26 W at 4 W EIAJ 2 × 21 W at 6 W EIAJ Rated Power 2 × 19 W min, RMS at 4 W 1 kHz no more than 0.2 % THD
Dynamic power	2 × 23 W at 4 W
Total harmonic distortion	0.4 % at rated power
IM distortion	0.2 % at rated power
Damping factor	25 at 8 Ω
Sensitivity and impedance	LINE, TAPE: 150 mV, 50 kW CDR: 150 mV, 50 kW
Frequency response	10 to 50,000 Hz : +0dB / -3 dB
Tone Control	S.BASS1: +4 dB at 40 Hz S.BASS2: +8 dB at 50 Hz S.BASS3: +4 dB at 10 kHz/ +8 dB at 50 Hz
Signal to noise ratio	LINE, CDR, TAPE: 100dB (IHF-A)
Muting	50 dB

CD player

Signal readout system	Optical non-contact
Frequency response	10 Hz to 20 kHz (±3 dB)
Wow and flutter	Below threshold of measurability

MD recorder

Signal readout system	Optical non-contact
Recording time	320 minutes maximum (at LP4 mode)
Frequency response	10 Hz to 20 kHz (±3 dB)
Wow and flutter	Below threshold of measurability

Tuner

Tuning range	FM: 87.50 to 108.00 MHz (50 kHz steps) AM: 522 to 1611 kHz (9 kHz steps)
Usable sensitivity	FM Mono:11.2 dBf, 1.0 µV (75 WIHF) Stereo:17.2 dBf, 2.0 µV (75 WIHF) AM: 30 µV
50 dB quieting sensitivity	FM Mono:17.2 dBf, 2.0 µV (75 W) Stereo:37.2 dBf, 20.0 µV (75 W)
Capture ratio	2.0 dB
Image rejection ratio	FM: 85 dB AM: 40 dB
IF rejection ratio	FM: 90 dB AM: 40 dB
Signal to noise ratio	FM Mono : 73 dB IHF Stereo : 67 dB IHF AM: 40 dB
Selectivity	FM: 50 dB (±300 kHz at 40 kHz devi.)
Harmonic distortion	FM: Mono: 0.7 % Stereo: 0.3 % AM: 0.7 %
Frequency response	FM: 30 to 15,000 Hz (±1.5 dB)
Stereo separation	FM: 40 dB at 1,000 Hz FM: 30 dB at 100 to 10,000 Hz

Specifications and features are subject to change without noitce.

CAUTION ON REPLACEMENT OF OPTICAL PICKUP

The laser diode in the optical pickup block is so sensitive to static electricity, surge current and etc., that the components are liable to be broken down or its reliability remarkably deteriorated.

During repair,carefully take the following precautions. (The following precautions are included in the service parts.)

PRECAUTIONS

1.Ground for the work-desk.
Place a conductive sheet such as a sheet of copper (with impedance lower than 10 Mohm) on the work-desk and place the set on the conductive sheet so that the chassis can be grounded.

2.Grounding for the test equipments and tools.
Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3. Grounding for the human body.
Be sure to put on a wrist-strap for grounding whose other end is grounded.
Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

4. Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

5. Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING!!

SERVICE WARNING : DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY.

IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

Laser Diode Properties

Material: GaAS/GaALAs
Wavelength: 780nm
Laser output: max. 0.5mW*
Emission Duration: continuous
*This output is the value measured at a distance about 1.8mm from the objective lens surface on the Optical Pick-up Block.

LASER WARNING LABEL

The label shown below are affixed.

1. Warning label

DANGER-INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.
CAUTION-HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.
ATTENTION-RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L'ECLENCHEMENT DE SECURITE ANNULE.

2. Class 1 label

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

SERVICE PROCEDURE

1. Replacing the fuses

This symbol located near the fuse indicates that the fuse used is show operating type, For continued protection against fire hazard, replace with same type fuse , For fuse rating, refer to the marking adjest to the symbol.

Ce symbole indique que le fusible utilise est e lent. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce demier est indique la qu le present symbol est apposre.

REF.NO.	PART NO.		DESCRIPTION
F901	252157	⚠	1.25A-UL/T-237, Fuse <DT>
	252083	⚠	0.4A-SE-EAW, Fuse <GT>

NOTE : <DT> : 120 V model only
<GT> : 220 V~230 V model only

2. To initialize the unit

1. Press and the hold down the CD STOP button , then press the STANDBY/ON button.
2. After " All lighting " is displayed, the preset memory and each mode stored in the memory, are initialized and will return to the factory settings.
3. Press the STANDBY/ON button.
4. Unplug the AC plug from the wall outlet.

3. Safety-check out

(Only U.S.A. model)
After correcting the original service problem perform the follwing safety check before releasing the set to the customer
Connect the insulating-resistance tester between the plug of power supply cord and terminal GND on the back panel.
Specifications: More than 10Mohm at 500V

4. Memory Preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves the contents of the memory during power failures and even when the unit is un-plugged. The unit must be plugged in order to charge the back-up system.
The memory preservation period after the unit has been unplugged varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of a few weeks after the last time the unit has been unplugged. This period is shorter when the unit is exposed to a highly humid climate.

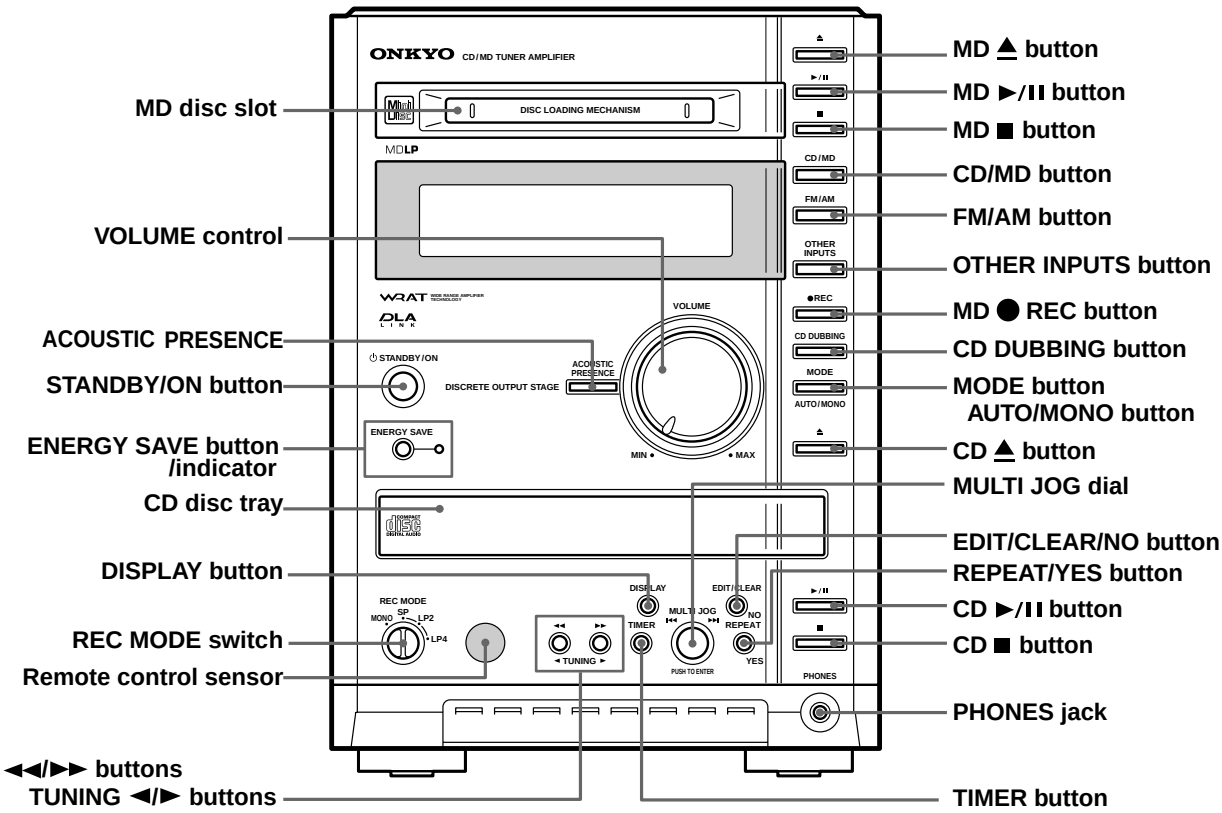
5. Changing the AM band step

With the exception of the worldwide models, a tuning step selector switch is not provided. When you change the band step, change the parts as shown below.

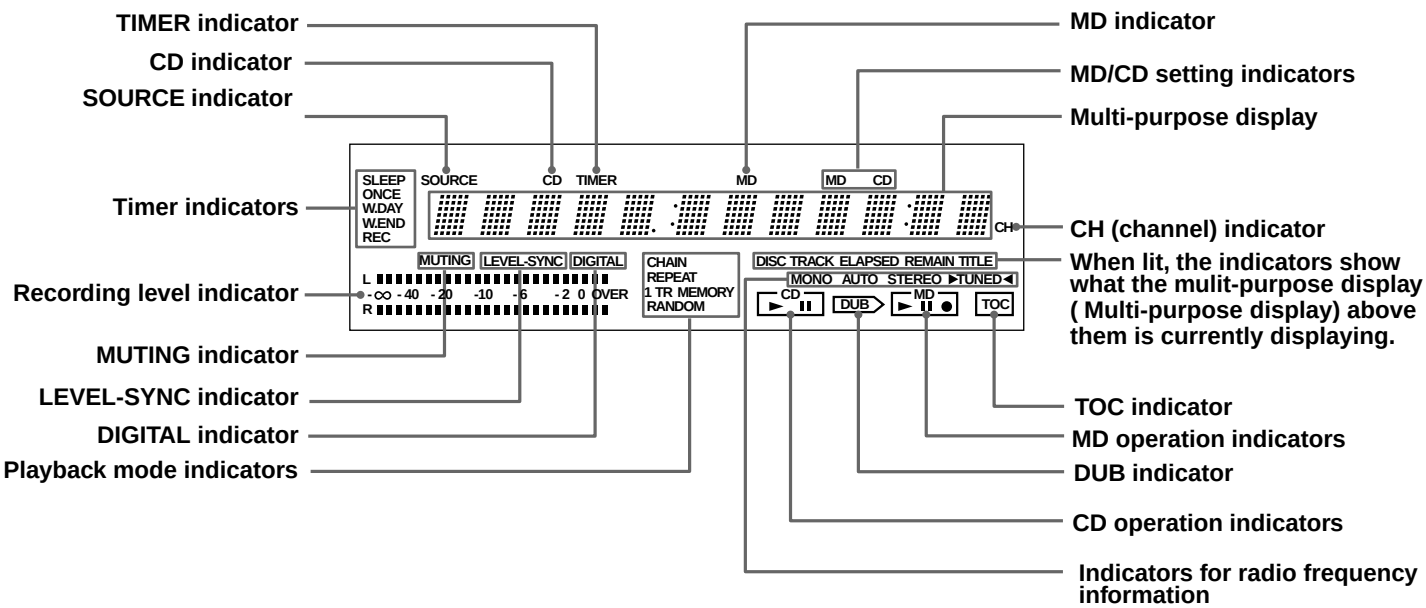
	To 10kHz	To 9kHz
R748	open	1 kohms
R749	1 koms	open

R748 and R749 on the microprocessor PC board (NADG-6933)

FRONT PANEL VIEW



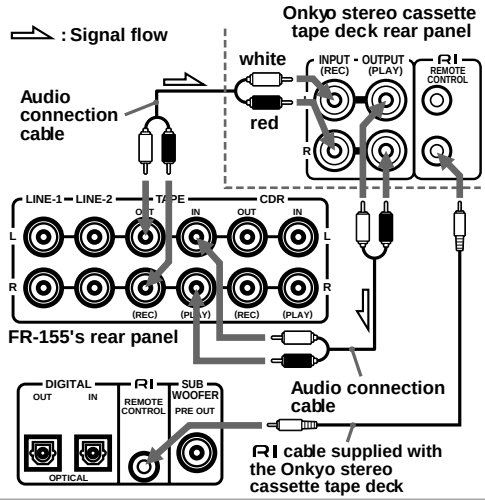
DISPLAY



CONNECTING TO OTHER COMPONETS

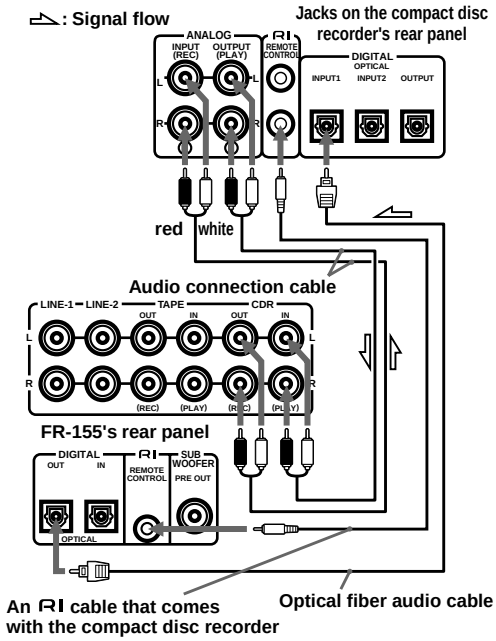
◆ Connecting an Onkyo stereo cassette tape deck

The illustration below describes the connections to an Onkyo stereo cassette tape deck. To connect to another cassette tape deck, connect the TAPE OUT (REC) and IN (PLAY) jacks of the unit to the INPUT (REC) and OUTPUT (PLAY) jacks of the cassette tape deck, respectively.



◆ Connecting an Onkyo compact disc recorder

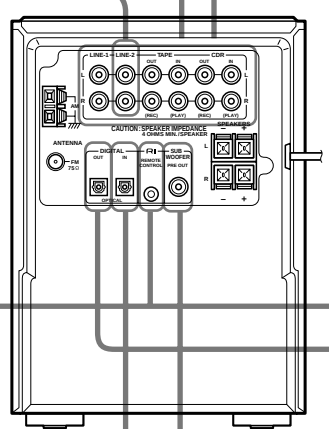
The following diagram shows how to connect an optional Onkyo compact disc recorder to the FR-155. Connect its CDR OUT (REC) jacks and IN (PLAY) jacks to the disc recorderÕs INPUT (REC) jacks and OUTPUT (PLAY) jacks respectively.



The jack connection enables you to use the following functions:

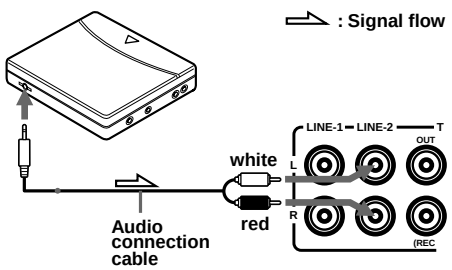
- You can control a connected Onkyo compact disc recorder from the FR-155's remote controller.
- When the connected Onkyo compact disc recorder plays back, the Input Selector on the FR-155 is automatically switched to CD-R.
- To connect both CD recorder and a cassette tape deck to the FR-155, connect the connectors of both devices.

Rear Panel View



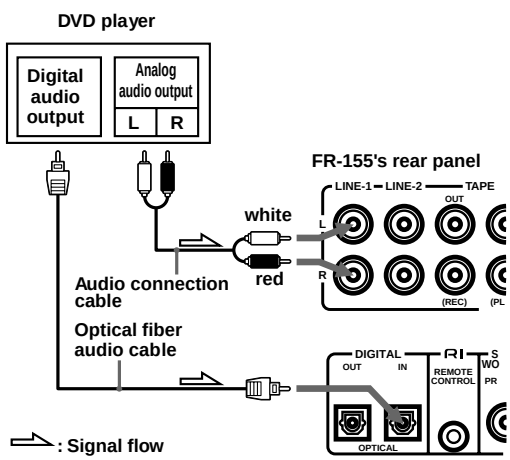
◆ Connecting a portable MD player

Refer to the portable MD playerÕs Instruction Manual.



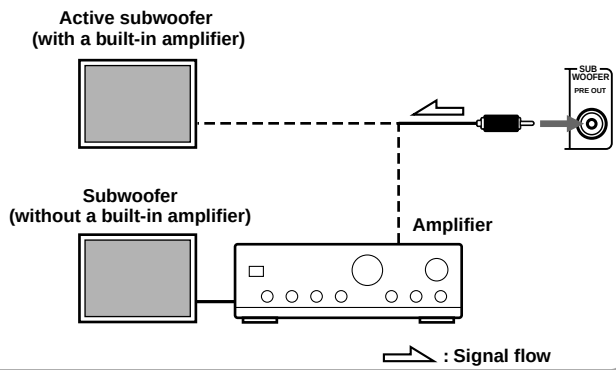
◆ Connecting a DVD player

In addition to the optical digital audio connections,you must also make analog connections.To connect to the Onkyo DVD player, be sure to connect to the LINE-1 jacks with the audio connection cable, not the LINE-2 jacks.

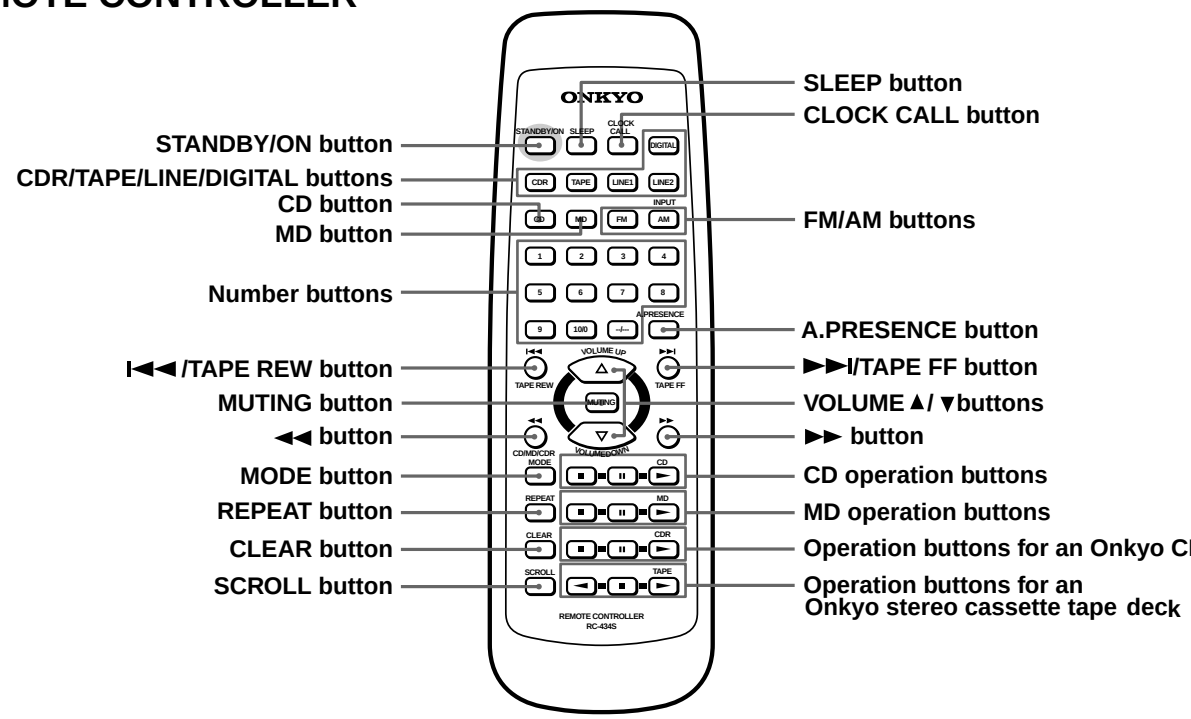


◆ Connecting a subwoofer

The FR-155 has a SUBWOOFER PRE OUT jack. Connect an active subwoofer (a subwoofer that contains an amplifier), or connect an amplifier to the FR-155, then connect a non-active subwoofer to the amplifier.



REMOTE CONTROLLER

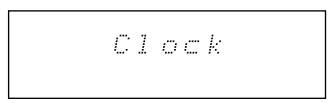


SETTING THE DAY OF THE WEEK AND THE TIME

You can select either the 12-hour display or 24-hour display. (This section explains how to set the time based on the 24-hour display.)

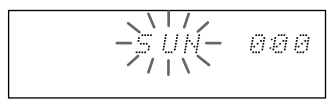
1 TIMER

Press TIMER repeatedly until "Clock" appears in the display.



2 MULTI JOG / PUSH TO

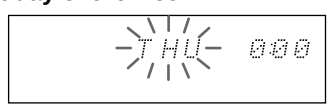
Press MULTI JOG.



You can now set the day of the week.
If you prefer the 12-hour display, press DISPLAY.

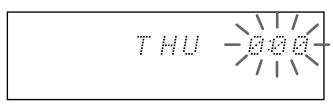
3 MULTI JOG / PUSH TO ENTER

Turn MULTI JOG to select the current day of the week.

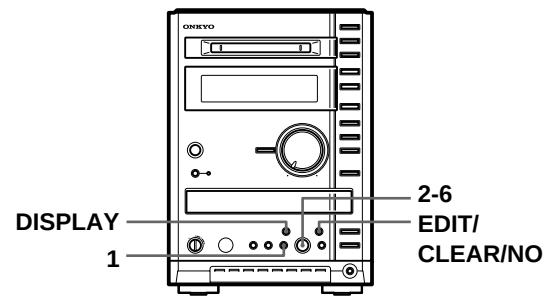


4 MULTI JOG / PUSH TO

Press MULTI JOG to confirm thesetting.

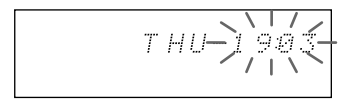


You can now set the time .



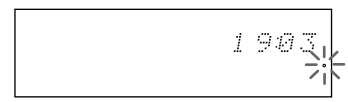
5 MULTI JOG / PUSH TO ENTER

Turn MULTI JOG to set the current time . (This example shows the 24-hour display.)



6 MULTI JOG / PUSH TO

Press MULTI JOG in sync with the time signal.

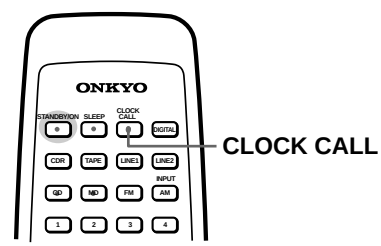


The clock starts operating and a dot indicating seconds starts to flash.

To cancel the clock setting
Press EDIT/CLEAR /**NO**.

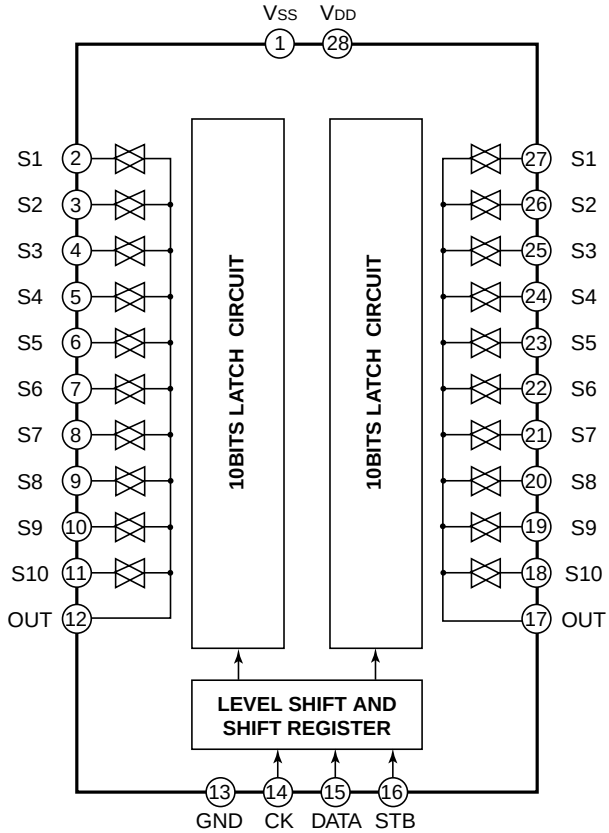
Checking the time and the day of the week

To check the time and the day of the week, press TIMER to display "Clock, then press DISPLAY.The display now indicates the day of the week and the current time.Alternatively,press CLOCK CALL on the remote controller. To switch between the 12-hour and 24-hour displays,press DISPLAY while the current time is indicated on the display.

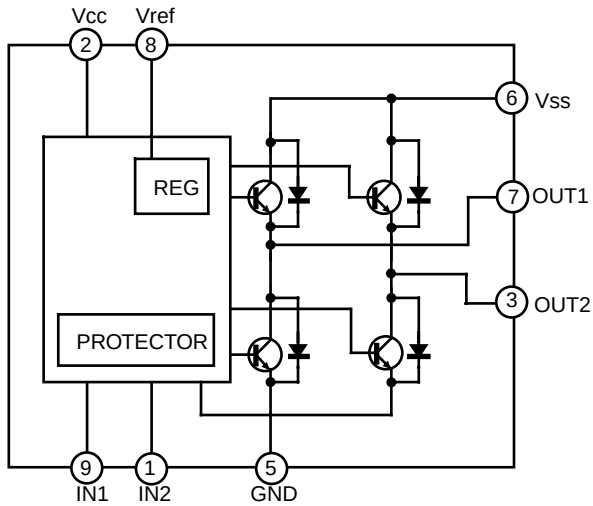


I C BLOCK DIAGRAM AND DESCRIPTIONS

Q401:TC9273N-004 (Analog function switch)



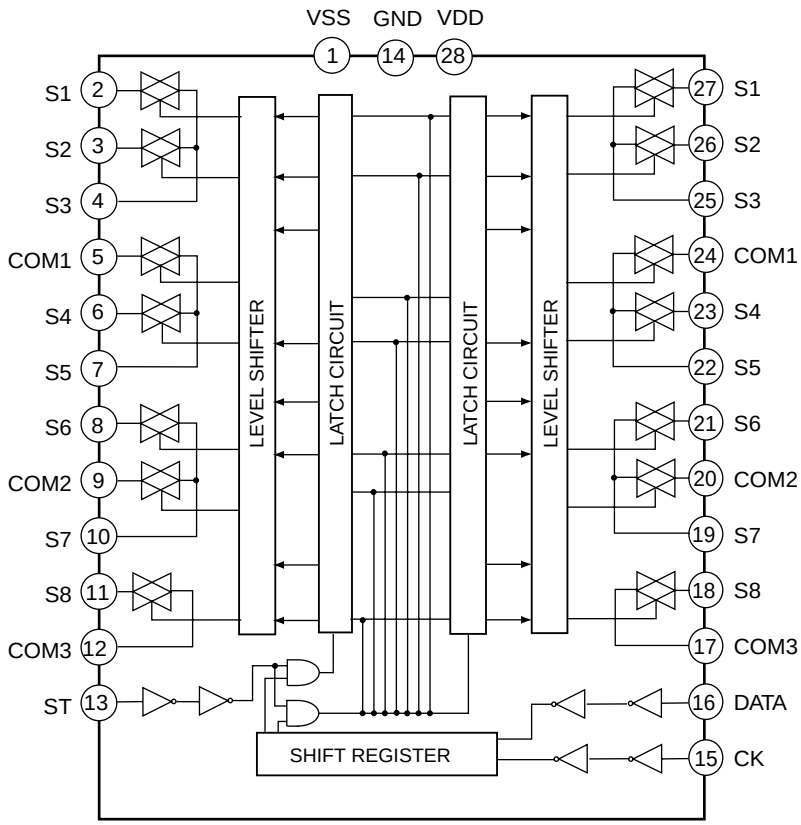
Q103,Q181:TA7291S (Motor driver)



INPUT		OUTPUT		
IN1	IN2	OUT1	OUT2	MODE
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	H	H	CCW/SW
1	1	L	L	BRAKE

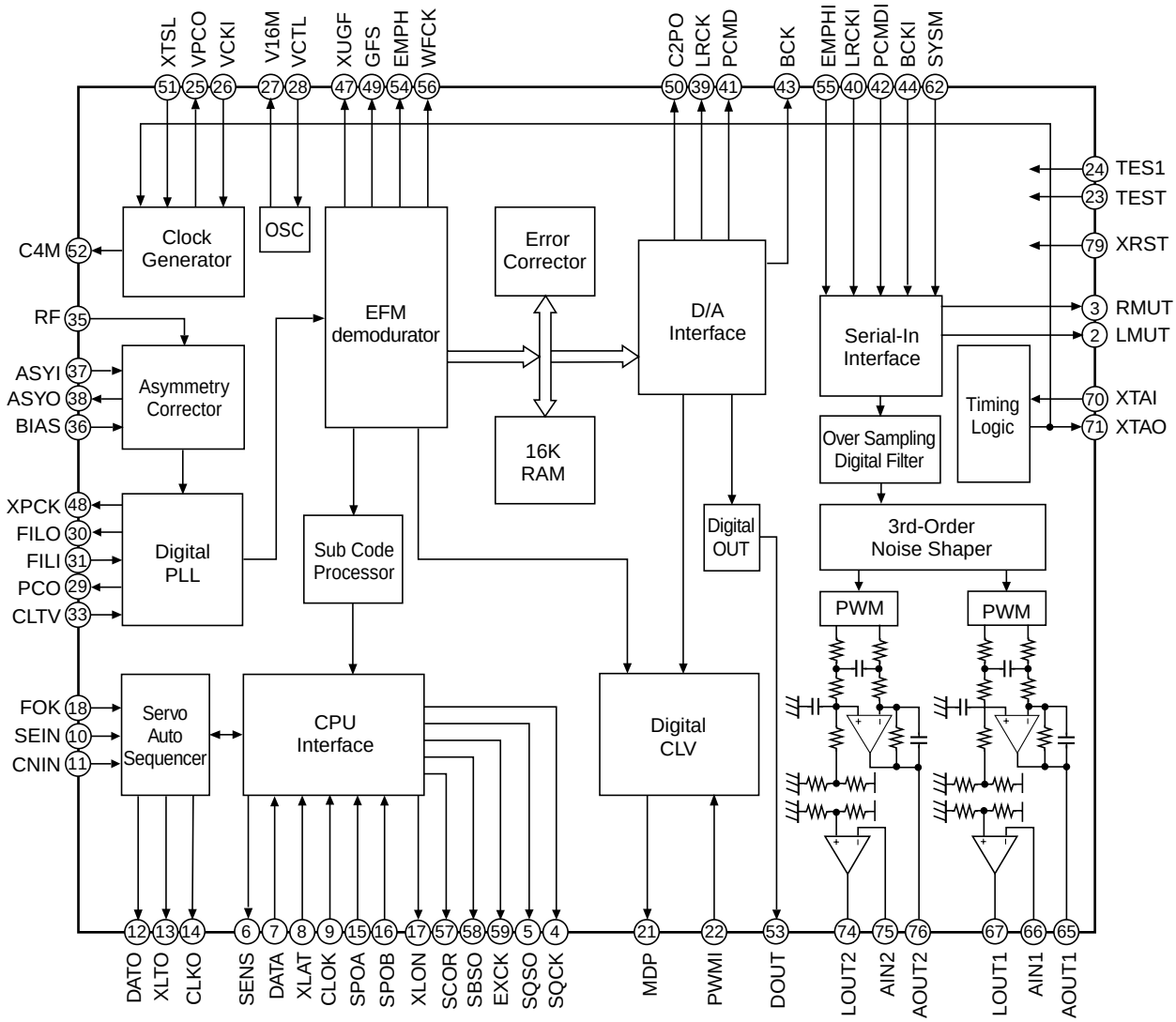
CCW : Counter clockwise direction
CW : Clockwise direction

Q447:TC9162AN (Analog function switch)



Q351:CXD2589Q (CD Digital Signal Processor)

Block Diagram

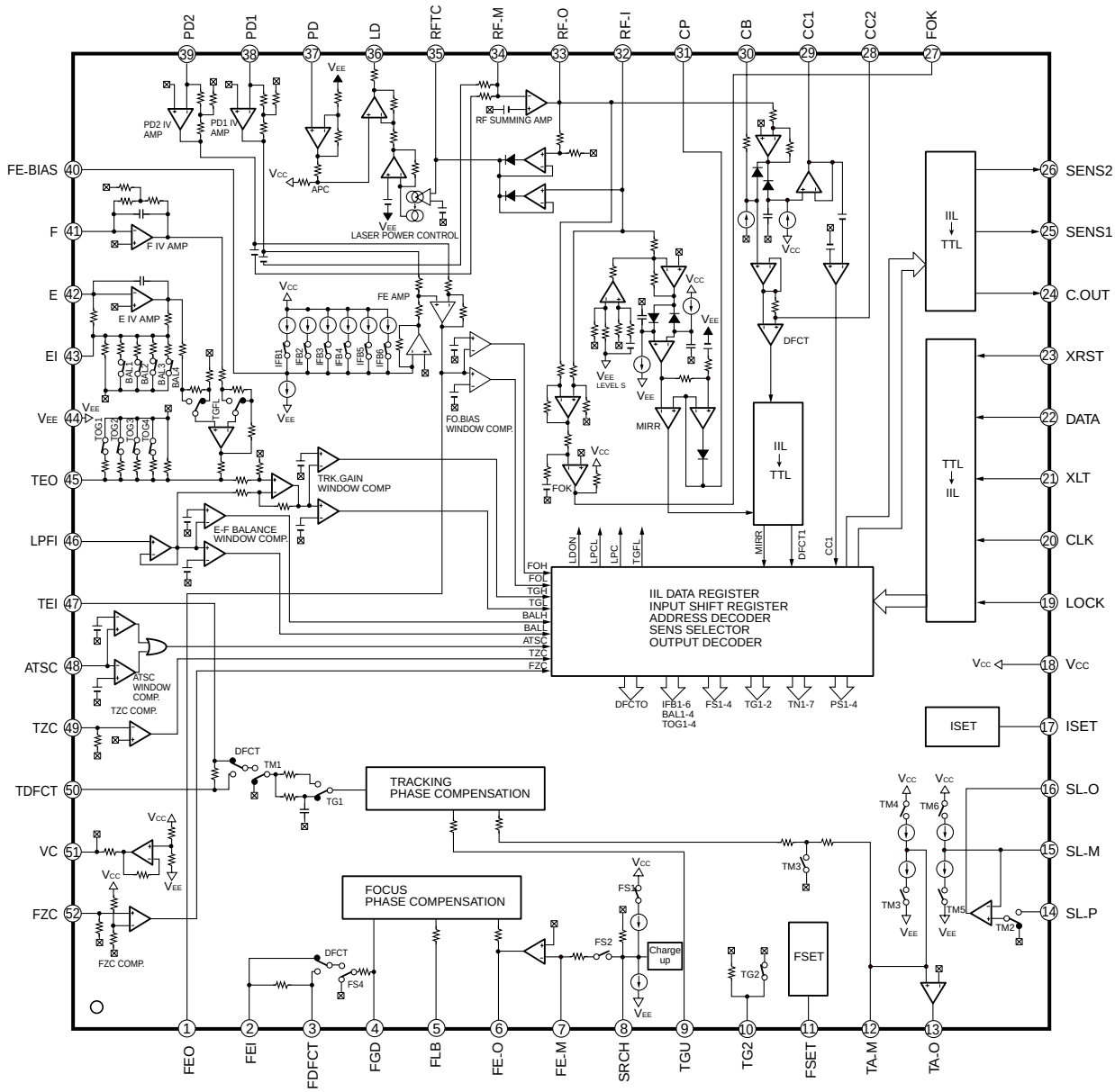


PIN Description

Pin No.	Symbol	I/O	Description	Pin No.	Symbol	I/O	Description
1	VSS	—	GND	43	BCK	O	D/A interface. Bit clock output.
2	LMUT	O	Left-channel zero detection flag.	44	BCKI	I	D/A interface. Bit clock input.
3	RMUT	O	Right-channel zero detection flag.	45	VSS	—	GND
4	SQCK	I	SQSO readout clock input.	46	VDD	—	Power supply (+5V).
5	SQSO	O	Sub Q 80-bit serial output.	47	XUGF	O	XUGF output. Switched to MNT1 or RFCK output by a command.
6	SENS	O	SENS output to CPU.				
7	DATA	I	Serial data input from CPU.	48	XPCK	O	XPLCK output. Switched to MNT0 output by a command.
8	XLAT	I	Latch input from CPU. Serial data is latched at the falling edge.	49	GFS	O	GFS output. Switched to MNT3 or XRAOF output by a command.
9	CLOK	I	Serial data transfer clock input from CPU.				
10	SEIN	I	SENS input from SSP.	50	C2PO	O	C2PO output. Switched to GTOP output by a command.
11	CNIN	I	Track jump count signal input.				
12	DATO	O	Serial data output to SSP.	51	XTSL	I	Crystal selector input. Low: 16.9344MHz; high: 33.8688MHz.
13	XLTO	O	Serial data latch output to SSP. Latched at the falling edge.	52	C4M	O	4.2336MHz output. 1/4 frequency-divided VCKI output in CAV-W mode.
14	CLKO	O	Serial data transfer clock output to SSP.				
15	SPOA	I	Microcomputer extended interface (input A).	53	DOUT	O	Digital Out output.
16	SPOB	I	Microcomputer extended interface (input B).	54	EMPH	O	Outputs a high signal when the playback disc has emphasis, and a low signal when there is no emphasis.
17	XLON	O	Microcomputer extended interface (output).				
18	FOK	I	Focus OK input. Used for SENS output and the servo auto sequencer.	55	EMPHI	I	Inputs a high signal when de-emphasis is on, and a low signal when de-emphasis is off.
19	VDD	—	Power supply (+5V).	56	WFCK	O	WFCK output.
20	VSS	—	GND	57	SCOR	O	Outputs a high signal when either subcode sync S0 or S1 is detected.
21	MDP	O	Spindle motor servo control.				
22	PWMI	I	Spindle motor external control input.	58	SBSO	O	Sub P to W serial output.
23	TEST	I	TEST pin; normally GND.	59	EXCK	I	SBSO readout clock input.
24	TES1	I	TEST pin; normally GND.	60	VSS	—	GND
25	VPCO	O	Charge pump output for the wide-band EFM PLL.	61	VDD	—	Power supply (+5V).
26	VCKI	I	VCO2 oscillation input for the wide-band EFM PLL.	62	SYSM	I	Mute input. Active when high.
27	V16M	O	VCO2 oscillation output for the wide-band EFM PLL.	63	AVSS	—	Analog GND.
				64	AVDD	—	Analog power supply (+5V).
28	VCTL	I	VCO2 control voltage input for the wide-band EFM PLL.	65	AOUT1	O	Left-channel analog output.
				66	AIN1	I	Left-channel operational amplifier input.
29	PCO	O	Master PLL charge pump output.	67	LOUT1	O	Left-channel LINE output.
30	FILO	O	Master PLL (slave = digital PLL) filter output.	68	AVSS	—	Analog GND.
31	FILI	I	Master PLL filter input.	69	XVDD		Power supply for master clock.
32	AVSS	—	Analog GND.	70	XTAI	I	Crystal oscillation circuit input. Input the external master clock via this pin.
33	CLTV	I	Master VCO control voltage input.				
34	AVDD	—	Analog power supply (+5V).	71	XTAO	O	Crystal oscillation circuit output.
35	RF	I	EFM signal input.	72	XVSS		GND for master clock.
36	BIAS	I	Constant current input of the asymmetry circuit.	73	AVSS	—	Analog GND.
37	ASYI	I	Asymmetry comparator voltage input.	74	LOUT2	O	Right-channel LINE output.
38	ASYO	O	EFM full-swing output (low = VSS, high = VDD).	75	AIN2	I	Right-channel operational amplifier input.
39	LRCK	O	D/A interface. LR clock output f = Fs.	76	AOUT2	O	Right-channel analog output.
40	LRCKI	I	LR clock input.	77	AVDD	—	Analog power supply (+5V).
41	PCMD	O	D/A interface. Serial data output (two's complement, MSB first).	78	AVSS	—	Analog GND.
				79	XRST	I	System reset. Reset when low.
42	PCMDI	I	D/A interface. Serial data input (two's complement, MSB first).	80	VDD	—	Power supply (+5V).

Q101:CXA1992BR (RF Signal Processing Servo Amplifier)

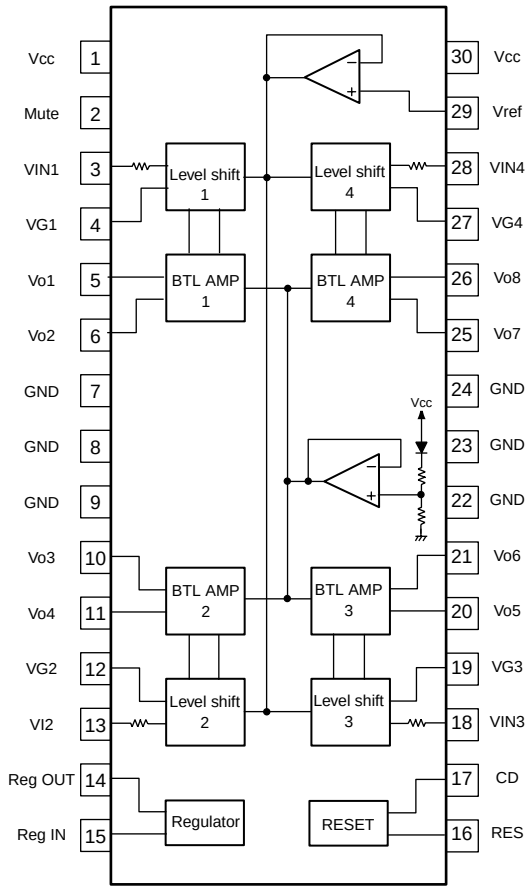
Block Diagram



Pin Description

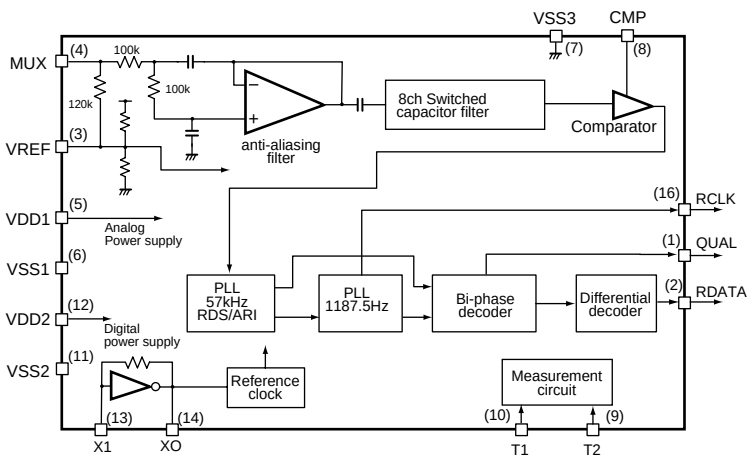
Pin No.	Symbol	I/O	Description	Pin No.	Symbol	I/O	Description
1	FEO	O	Focus error amplifier output. Connected internally to the window comparator input for bias adjustment.	26	SENS2	O	Outputs DFCT2, MIRR, BALL, TGL, FOL, and others according to the command from the CPU.
				27	FOK	O	Focus OK comparator output.
2	FEI	I	Focus error input.	28	CC2	I	Input for the defect bottom hold output with capacitance coupled.
3	FDFCT	I	Capacitor connection pin for defect time constant.				
4	FGD	I	Ground this pin through a capacitor for cutting the focus servo high-frequency gain.	29	CC1	O	Defect bottom hold output. Connected internally to the interruption comparator input.
5	FLB	I	External time constant setting pin for boosting the focus servo low-frequency.	30	CB	I	Connection pin for defect bottom hold capacitor.
				31	CP	I	Connection pin for MIRR hold capacitor. MIRR comparator non-inverted input.
6	FE_O	O	Focus drive output.				
7	FE_M	I	Focus amplifier inverted input.	32	RF_I	I	Input for the RF summing amplifier output with capacitance coupled.
8	SRCH	I	External time constant setting pin for generating focus search waveform.				
				33	RF_O	O	RF sunning amplifier output. Eyepattern check point.
9	TGU	I	External time constant setting pin for switching tracking high-frequency gain.	34	RF_M	I	RF summing amplifier inverted input. The RF amplifier gain is determined by the resistance connected between this pin and RFO pin.
10	TG2	I	External time constant setting pin for switching tracking high-frequency gain.				
11	FSET	I	Peak frequency setting pin for focus and tracking phase compensation amplifier.	35	RFTC	I	External time constant setting pin during RF level control.
12	TA_M	I	Tracking amplifier inverted input.	36	LD	O	APC amplifier output.
13	TA_O	O	Tracking drive output.	37	PD	I	APC amplifier input.
14	SL_P	I	Sled amplifier non-inverted input.	38	PD1	I	RF I-V amplifier inverted input. Connect these pins
15	SL_M	I	Sled amplifier inverted input.	39	PD2	I	to the photo diode A + C and B + D pins.
16	SL_O	O	Sled drive output.	40	FE_BIAS	I	Bias adjustment of focus error amplifier. Leave this pin open for automatic adjustment.
17	ISET	I	Connect an external capacitance to set the current which determines the Focus search, Track jump, and Sled kick heights.				
				41	F	I	F I-V and E I-V amplifier inverted input.
				42	E	I	Connect these pins to photo diodes F and E.
18	VCC	I	Positive power supply.	43	EI	—	I-V amplifier E gain adjustment. (When not using automatic balance adjustment)
19	LOCK	I	The sled overrun prevention circuit operates when this pin is Low. (no pull-up resistance)				
				44	VEE	—	Negative power supply.
20	CLK	I	Serial data transfer clock input from CPU. (no pull-up resistance)	45	TEO	O	Tracking error amplifier output. E-F signal is output.
				46	LPFI	I	Comparator input for balance adjustment. (Input from TEO through LPF)
21	XLT	I	Latch input from CPU. (no pull-up resistance)				
22	DATA	I	Serial data input from CPU. (no pull-up resistance)	47	TEI	I	Tracking error input.
23	XRST	I	Reset input; resets at Low. (no pull-up resistance)	48	ATSC	I	Window comparator input for ATSC detection.
24	C. OUT	O	Track number count signal output.	49	TZC	I	Tracking zero-cross comparator input.
25	SENS1	O	Outputs FZC, DFCT1, TZC, BALH, TGH, FOH, ATSC, and others according to the command from CPU.	50	TDFCT	I	Capacitor connection pin for defect time constant.
				51	VC	O	(VCC + VEE)/2 direct voltage output.
				52	FZC	I	Focus zero-cross comparator input.

Q102:LA6541D (CD 4-channel BTL Driver)



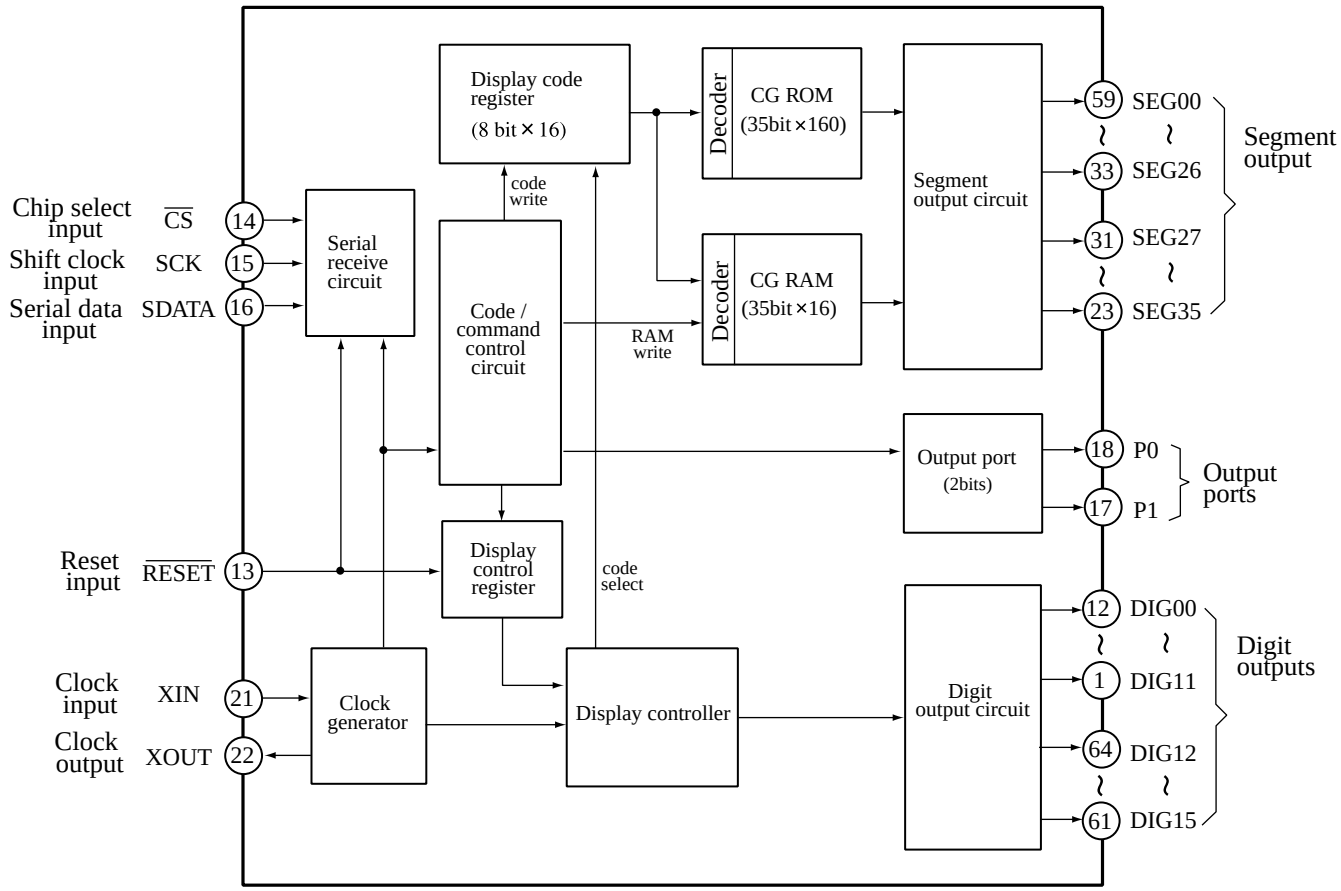
Pin No.	Pin Name	Description (Function)
1	V_{CC}	Power supply (shorted with pin 30)
2	Mute	ON/OFF control for all BTL AMP outputs
3	$V_{IN}1$	BTL AMP 1 input
4	VG1	BTL AMP 1 input (for gain control)
5	Vo1	BTL AMP 1 output (non-inverting side)
6	Vo2	BTL AMP 1 output (inverting side)
7	GND	GND (minimum electric potential)
8	GND	GND (minimum electric potential)
9	GND	GND (minimum electric potential)
10	V_O3	BTL AMP 2 output (inverting side)
11	V_O4	BTL AMP 2 output (non-inverting side)
12	VG2	BTL AMP 2 input (for gain control)
13	$V_{IN}2$	BTL AMP 2 input
14	REG OUT	Connection for collector of external transistor (PNP); 5 V supply output
15	REG IN	Connection for base of external transistor (PNP)
16	$\overline{RES}$	Reset output
17	C_D	Reset output delay time setting (with capacitor)
18	$V_{IN}3$	BTL AMP 3 input
19	VG3	BTL AMP 3 input (for gain control)
20	V_O5	BTL AMP 3 output (non-inverting side)
21	V_O6	BTL AMP 3 output (inverting side)
22	GND	GND (minimum electric potential)
23	GND	GND (minimum electric potential)
24	GND	GND (minimum electric potential)
25	V_O7	BTL AMP 4 output (inverting side)
26	V_O8	BTL AMP 4 output (non-inverting side)
27	VG4	BTL AMP 4 input (for gain control)
28	$V_{IN}4$	BTL AMP 4 input
29	V_{REF}	Reference voltage input for level shift circuit
30	V_{CC}	Power supply (shorted with pin 1)

Q171:BU1923(RDS Decoder)



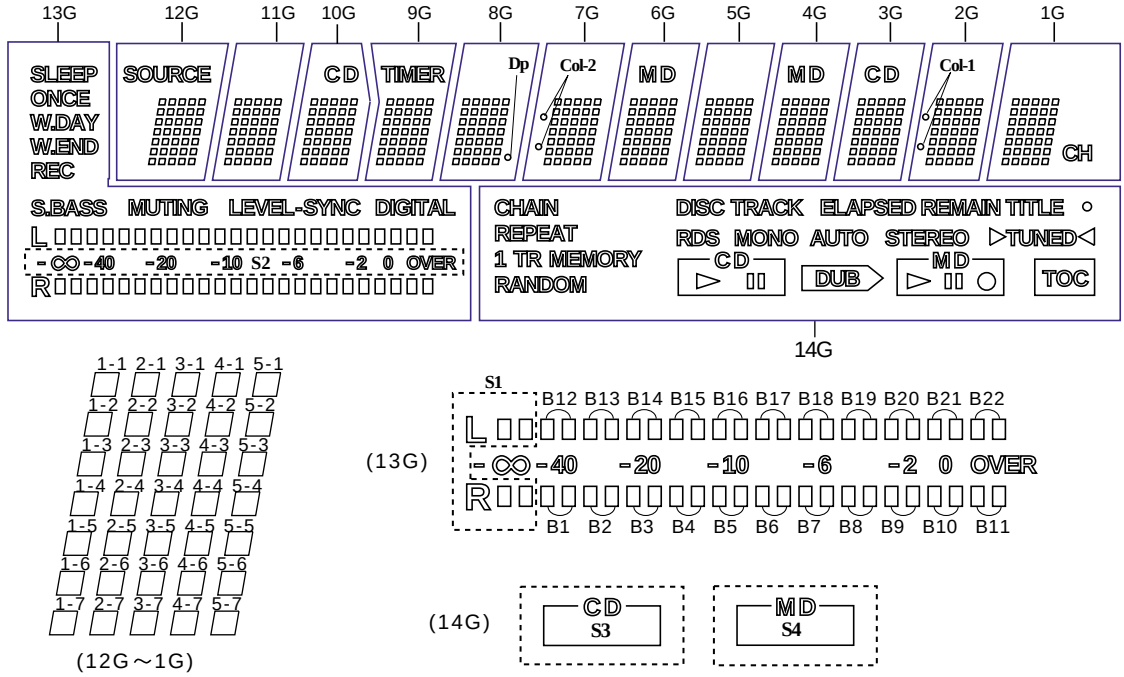
Pin No.	Symbol	Pin name	Function
1	QUAL	Demodulator quality	Good data : High , bad data : Low
2	RDATA	Demodulator data	Refer to output data trimming
3	Vref	Reference voltage	1/2 VDD1 (refer to input/output circuits)
4	MUX	Input	Composite signal input
5	VDD1	Analog power supply	4.5V to 5.5V
6	Vss1		
7	Vss3	GND	-
8	CMP	Comparator input	C-junction
9	T2	Test input	Open or connected to ground
10	T1		
11	VDD2	Digital power supply	4.5V to 5.5V
12	Vss2		
13	XI	Crystal oscillor	Connects to 4.332MHz oscillator
14	XO		(refer to input/output circuit)
15	(NC)	-	-
16	RCLK	Demodulator clock	1187.5Hz clock

Q752:M66004F (FL Tube Driver)



Pin No.	Symbol	Pin name	Function
13	$\overline{\text{RESET}}$	Reset input	This pin is used to initialize the internal state on the M66004
14	$\overline{\text{CS}}$	Chip select input	"L" : communication with the MCU is possible. "H" : any instruction from teh MCU is neglected.
15	SCK	Shift select input	At the rising edge from "L"to"H" , input data is shifted.
16	SDATA	Serial data input	Character code or command data to display is input from MSB.
21, 22	XIN, XOUT	Clock input Clock output	Set oscillation frequency
1-12 61-64	DIG00 - DIG15	Digit output	These pins are used to connect to digit pins of VFD.
23-31 33-59	SEG00 - SEG35	Segment output	These pins are used to connect to segment pins of VFD.
17,18	P0,PI		Output port (static operation)
19	VCC1		Positive power supply for internal logic.
60	VCC2		Positive power supply for high-pressure-resistant output port.
22	VSS		GND
32	VP		Negative power supply for VFD drive.

Q751:BJ780GNK(FL Tube)



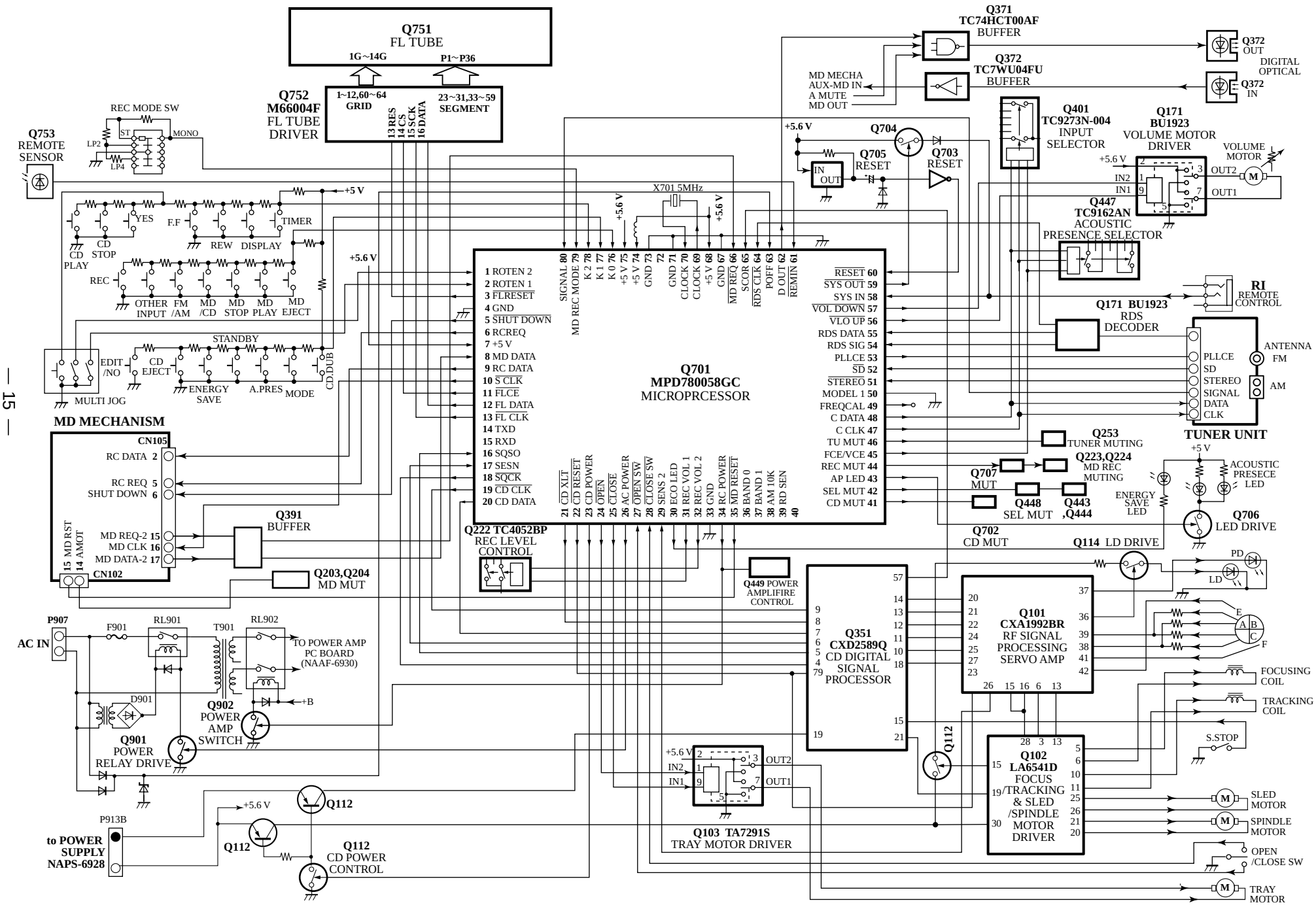
(12G～1G)

(13G)

(14G)

	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	CHAIN	B1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1
P2	REPEAT	B8	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1
P3	1 TR	B12	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1
P4	MEMORY	B19	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1
P5	RANDOM	S1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1
P6	DISC	B2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
P7	TRACK	B9	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2
P8	ELAPSED	B13	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2
P9	REMAIN	B20	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2
P10	TITLE	S2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2
P11	RDS	B3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
P12	MONO	B10	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3
P13	AUTO	B14	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3
P14	STEREO	B21	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3
P15	▷TUNED◁	OVER	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3
P16	S3	B4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4
P17	▷ (CD)	B11	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4
P18	▯▯ (CD)	B15	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4
P19	DUB	B22	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4
P20	S4	SLEEP	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4
P21	▷ (MD)	B5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
P22	▯▯ (MD)	ONCE	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5
P23	○ (MD)	B16	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5
P24	TOC	W.DAY	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5
P25	○ (TITLE)	W.END	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5
P26	-	B6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6
P27	-	REC	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6
P28	-	S.BASS	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7
P29	-	MUTING	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7
P30	-	B18	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7
P31	-	LEVEL-SYNC	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7
P32	-	B7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7
P33	-	DIGITAL	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6
P34	-	-	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
P35	-	B17	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6
P36	-	-	SOURCE	-	CD	TIMER	Dp	col 2	MD	-	MD	CD	col 1	CH

MICROPROCESSOR CONNECTION DIAGRAM



MICROPROCESSOR TERMINAL DESCRIPTION

Q701:MPD780058GC-8BT

PIN No.	Function	I/O	Description	PIN No.	Function	I/O	Description
1	ROTEN2	I	Pulse input pin 1 from rotary encoder.	41	CDMUT	O	Muting signal output pin for CD analog signal.
2	ROTEN1	I	Pulse input pin 2 from rotary encoder.	42	SELMUT	O	Muting signal output pin for audio section.
3	FLRESET	O	Reset signal output pin for FL driver IC(M66004)	43	APLED	O	Control output pin of acoustic presence indicator.
4	GND	I	Ground pin.	44	RECMUT	O	Muting signal output pin for muting of MD recording signal.
5	SHUTDOWN	O	Output pin of power failure signal for MD mechanism microcomputer.	45	FCE/VCE	O	Chip enable signal output pin for function ICs(T9273,TC9162).
6	RCREQ	O	Serial data output pin for communication of MD microcomputer.	46	TUMUT	O	Muting signal output pin for tuner signal.
7	AVDD	I	Power supply pin for A/D converter.	47	CCLK	O	Clock data output pin for Ics of receiver section.
8	MDDATA	I	Serial transfer data input pin from MD mechanism microcomputer.	48	CDATA	O	Serial data output pin for Ics of receiver section.
9	RCDATA	O	Serial transfer data output pin to MD mechanism microcomputer.	49	FREQCAL	O	Output pin for adjustment of main clock frequency
10	SCLK	O	Serial transfer clock output pin to MD mechanism microcomputer.	50	MODEL1	I	Initialization input pin for model set.
11	FLCE	O	Chip enable signal output pin for FL drover IC(M66004).	51	STEREO	I	FM stereo broadcast detection input pin.
12	FLDATA	O	Serial data output pin for FL drover IC(M66004).	52	SD	I	Broadcast detection input pin.
13	FLCLK	O	Clock data output pin for FL drover IC(M66004).	53	PLLCE	O	Chip enable signal output pin for tuner PLL IC.
14	TXD	O	Output pin for flash writer.	54	RDSSIG	I	Not used.
15	RXD	I	Input pin for flash writer.	55	RDSDATA	I	Not used.
16	SQSO	I	Input pin of subcode data from CD signal processor IC(CXD2589).	56	VOLUP	O	Control output pin for motor driver IC of volume.
17	SENS	I	Input pin of sens data from CD signal processor IC(CXD2589).	57	VOLDOWN	O	Control output pin for motor driver IC of volume.
18	SQCK	O	Clock signal output pin for read out to signal processor IC(CXD2589).	58	SYSIN	I	System code input pin.
19	CDCLK	O	Command output pin for transfer the clock signal to CD signal processor IC(CDX2589).	59	SYSOUT	O	System code output pin.
20	CDDATA	O	Command output pin for transfer the data signal to CD signal processor IC(CXD2589).	60	RESET	I	System reset input pin.
21	CDXLT	O	Command output pin for transfer the latch signal to CD signal processor IC(CXD2589).	61	REMIN	I	Signal input pin from remote sensor.
22	CDRESET	O	Reset signal output pin for CD circuit ICs(CXD2589,CXA1992)	62	DOUT	O	Control output pin for CD/MD digital output selector. (H=CD, L=MD)
23	CDPOWER	O	Control signal output pin for CD circuit.	63	POFF	I	Power failure detect input pin.
24	OPEN	O	Control signal output pin for motor driver IC of CD tray.	64	RDSCLK	I	Not used.
25	CLOSE	O	Control signal output pin for motor driver IC of CD tray.	65	SCOR	I	Detection signal input pin CD signal processor IC(CXD2589).
26	ACPOWER	O	Control signal output pin for relay of main power supply.	66	MDREQ	I	Signal input pin for communication from MD mechanism microprocessor.
27	OPENSW	I	Detection signal input pin for the opening completion of CD tray.	67	GND	I	Ground pin.
28	CLOSESW	I	Detection signal input pin for the closing completion of CD tray.	68	VDD	I	Power supply pin. (+5V)
29	SENS2	I	Sens2 signal input pin from CD servo IC(CXA1992)	69	CLOCK	O	Master clock connection pin.
30	ECOLED	O	Control output pin of energy save indicator.	70	CLOCK	I	Master clock connection pin. (connect the trimming capacitor)
31	RECVOL1	O	Output pin 1 for MD recording level adjust IC.	71	GND	I	Not used. (connect ground)
32	RECVOL2	O	Output pin 2 for MD recording level adjust IC.	72		O	Not used.
33	GND	I	Ground pin.	73	GND	I	Not used. (connect ground)
34	RCPOWER	O	Output pin for control relay of power supply in receiver section.	74	VDD	I	Power supply pin. (+5V)
35	MDRESET	O	Output pin of reset signal for MD mechanism.	75	AVDD	I	Power supply for A/D converter.
36	BAND0	I	Initializing input pin 1 for FM band.	76	K0	I	Operation key-1 connection input pin.
37	BAND1	I	Initializing input pin 2 for FM band.	77	K1	I	Operation key-2 connection input pin.
38	AM10K	I	Initializing input pin 2 for AM band step.	78	K2	I	Operation key-3 connection input pin.
39	RDSEN	I	Initializing input pin of RDS function. (H=Function, L=Not function)	79	MDRECMODE	I	Connect the MD recording mode serector.
40		I	Not used.(ground)	80	SIGNAL	I	Signal level input pin for automatic memory.

OPERATION OF THE MICROPROCESSOR

OPERATION OF THE MICROPROCESSOR TERMINAL LINKED WITH THE ENERGY SAVE FUNCTION

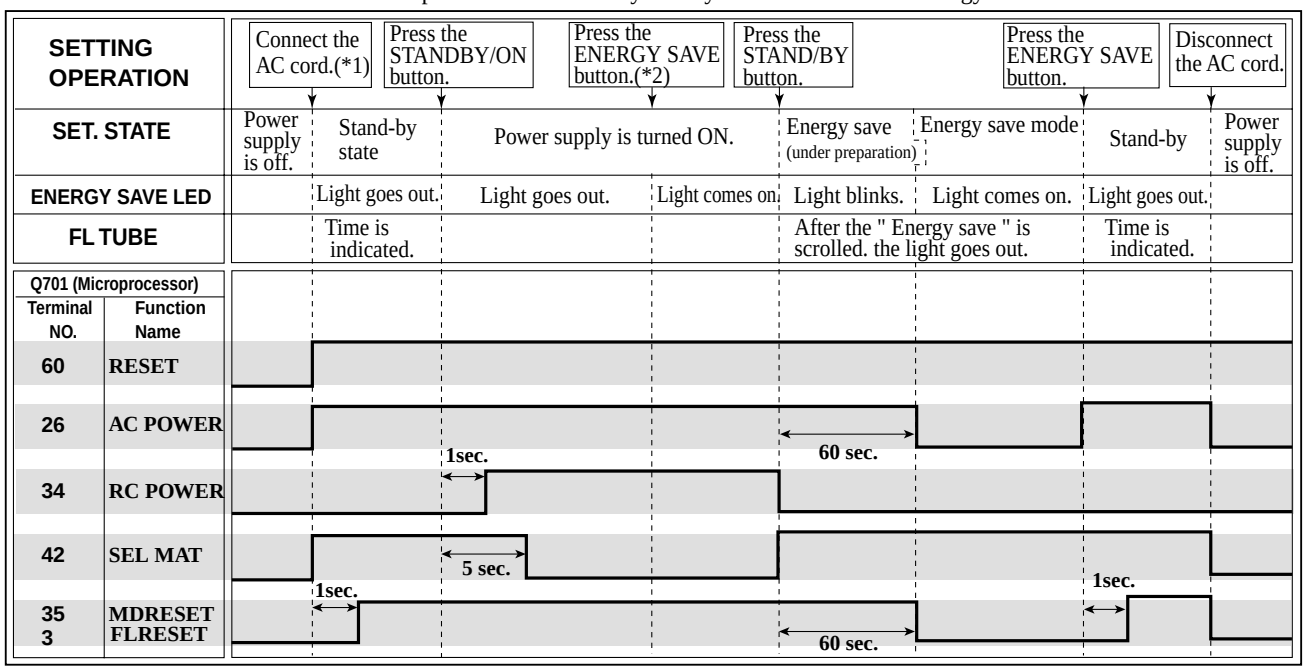
In the energy save mode (including the preparation period). only the STANDBY/ON button and the ENERGY SAVE button can be operated. 60 seconds after the energy save is operated. the microprocessor is turned to the energy save mode.

Even if the AC cord is removed. the energy save mode is stored. (the stored period is about 2 or 3 weeks that are the same as the stored period of the preset values for the tuner.) When the initial values are set. the energy save mode is released.

(*1) : The back-up voltage for the microprocessor is supposed to be 0 volt after the initial values are set.

(*2) : The energy save mode is set when the power supply is on.

When the ENERGY SAVE button is pressed in the stand-by state. you can also enter the energy save mode.



OPERATION of RECVOL1 and RECVOL 2

Analog switch (TC-4052) is controlled here.

Terminal No.	Function Name	Rec. Level 1	2	3	4
31	REC VOL1	L	H	L	H
32	REC VOL2	L	L	H	H

OPERATION of CDMUT. TUMUT and REC MUT

ON means that the mute function is always on and OFF means that the mute function is always off. The mute functions shown by CONTROL become ON or OFF according to the set states.

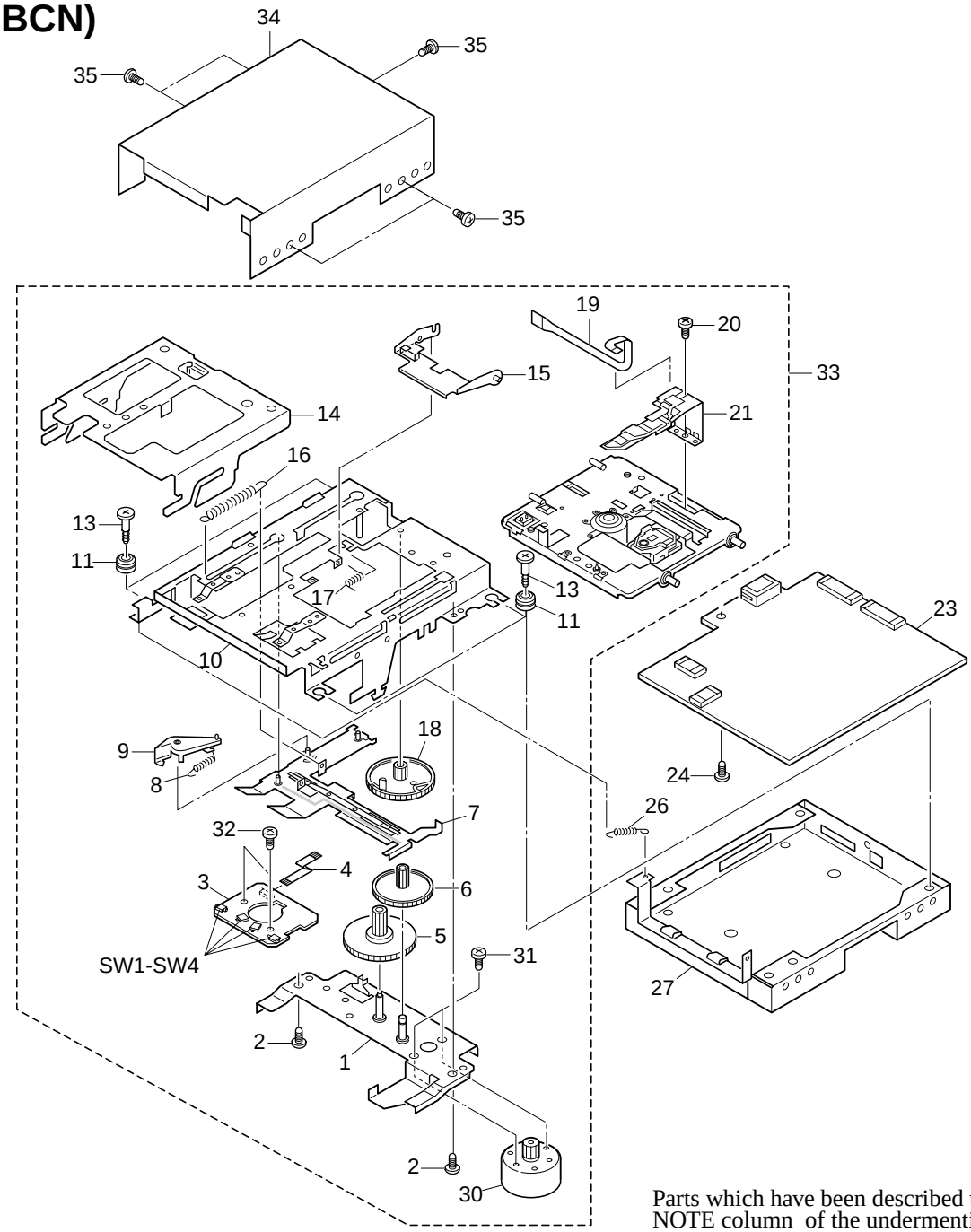
Terminal No.	Function Name	Input Selector MD	CD	FM/AM	TAPE	CD R	LINE-1	LINE-2	DIGITAL
41	CD MUT	ON	CONTROL	ON	ON	ON	ON	ON	ON
46	TU MUT	ON	ON	CONTROL	ON	ON	ON	ON	ON
44	REC MUT	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON

OTHER OPERATIONS

H means the high level and L means the low level. The state shown by CONTROL varies with the set state.

Terminal No.	Function Name	Input Selector CD	CD Except	In stand-by state	In energy save state	Terminal No.	Function Name	Input Selector CD	CD Except	In stand-by state	In energy save state
3	~FLRESET	CONTROL	CONTROL	CONTROL	L	31	RECVOL1	CONTROL	CONTROL	L	L
5	~SHUTDOWN	H		H	L	32	RECVOL2	CONTROL	CONTROL	L	L
6	~RICKRACK	CONTROL	CONTROL	CONTROL	L	33	GOD	-	-	-	-
9	RCDATA	CONTROL	CONTROL	CONTROL	L	34	RCPOWER	H	H	L	L
10	~SILK	CONTROL	CONTROL	CONTROL	L	35	~MDRESET	CONTROL	CONTROL	H	L
11	~FACE	CONTROL	CONTROL	CONTROL	L	41	CDMUT	CONTROL	L	L	L
12	FLAT	CONTROL	CONTROL	CONTROL	L	42	SELMUT	CONTROL	CONTROL	H	H
13	~FLCLK	CONTROL	CONTROL	CONTROL	L	43	AILED	CONTROL	CONTROL	L	L
14	TAD	CONTROL	L	L	L	44	RECUT	CONTROL	CONTROL	H	H
15	RED	L	L	L	L	45	FCE/VCE	CONTROL	CONTROL	L	L
18	~SACK	L	L	L	L	46	TUMULT	CONTROL	CONTROL	H	H
19	~CDCLK	CONTROL	L	L	L	47	CLACK	CONTROL	CONTROL	L	L
20	CDDATA	CONTROL	L	L	L	48	DATA	CONTROL	CONTROL	L	L
21	~CDXLT	CONTROL	L	L	L	49	FRECKLE	L	L	L	L
22	~CDRESET	CONTROL	L	L	L	53	PLACE	CONTROL	CONTROL	L	L
23	CDPOWER	CONTROL	L	L	L	56	~VOLUP	CONTROL	CONTROL	H	L
24	~OPEN	CONTROL	H	H	L	57	~VOLDOWN	CONTROL	CONTROL	H	L
25	~CLOSE	CONTROL	H	H	L	59	~SYSOUT	CONTROL	CONTROL	CONTROL	CONTROL
26	ACPOWER	H	H	H	L	62	DOLT	CONTROL	CONTROL	L	L
30	EQUALLED	CONTROL	CONTROL	CONTROL	CONTROL						

MD MECHANISM EXPLODED VIEW(1)
(KMK-260BCN)

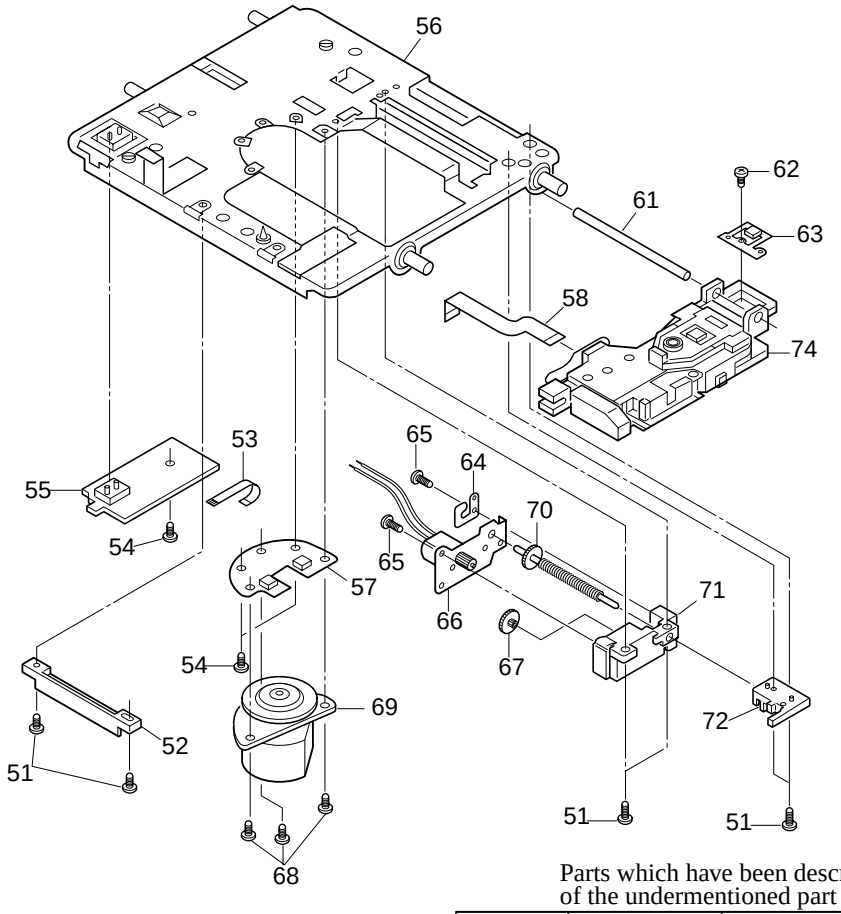


Parts which have been described to the NOTE column of the undermentioned part list as NSP are not supplied.

Ref. No.	Part No.	Description	NOTE
1	-	Motor Plate ass'y	NSP
2	7685-790-09	Screw(+PTT2.6×4 Type S)	
3	-	L-SW pc board	NSP
4	-	Flexible flat cable(5 core)	NSP
5	2646-555-02	Gear(Relay B)	
6	2646-554-11	Gear(Relay A)	
7	X2646-249-1	Slot Frame ass'y	
8	2646-563-01	Spring(Slot arm), Tension coil	
9	2646-556-01	Slot Arm	
10	-	Load Frame ass'y	NSP
11	2646-548-01	Insulator	
13	2647-337-01	Screw, Step	
14	-	Slide Frame	NSP
15	2646-559-02	Head Arm,	
16	2646-561-01	Spring, SP Tension	

Ref. No.	Part No.	Description	NOTE
17	2646-562-01	Spring	
18	2646-560-02	Gear	
19	1669-181-11	Head flexible pc board	
20	2627-529-01	Screw (+P1.7×2.5)	
21	1500-518-11	MD Over write head	
23	-	MD mount	NSP
24	7685-791-09	Screw (+PTT2.6×5 Type S)	
26	2646-545-01	Spring(Door arm), Tension coil	
27	-	Case(Lower)	NSP
30	X2626-328-1	Loading motor ass'y	
31	7627-852-38	Special screw(+P1.7×1.8 Type 3)	
32	7685-780-09	Screw (+TT2×3 Type S)	
33	-	Loading ass'y	NSP
34	-	Case(Upper)	NSP
35	7621-259-25	Screw (+P2.6×4)	

MD MECHANISM EXPLODED VIEW(2)
(KMK-260BCN)



Ref. No.	Part No.	Description	NOTE
51	2627-404-01	Screw (+P1.4×3.5 Type3)	
52	2646-453-01	Sub Guide	
53	1783-387-11	Flexible flat cable(7 core)	
54	7627-850-79	Special screw(+P1.4×1.8 Type 3)	
55	1677-526-11	D-SW pc board	
56	-	Mechanical Chassis	NSP
57	-	Bracket, Spindle motor	NSP
58	1669-180-11	Flexible pc board, Optical pick-up	
61	2646-452-01	Guide Shaft	
62	2627-529-01	Screw (+P1.7×2.5)	
63	2647-338-01	Rack Spring	
64	2646-567-01	Pre load Plate	
65	2627-431-01	Special screw(1.2×3.3)	
66	X2626-329-2	Slid motor ass'y	
67	2646-571-11	Gear (MD)	
68	7627-852-18	Special screw(+P1.7×4 Type 3)	
69	X2626-327-1	Spindle motor Ass'y	
70	X2626-330-1	Lead screw Ass'y	
71	2646-574-03	Lead holder(A)	
72	2646-573-01	Lead holder(B)	
74	A4672-541-A	KMS-260A/JIN	

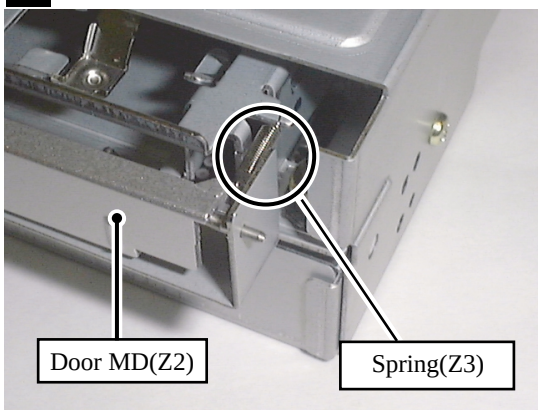
Parts which have been described to the NOTE column of the undermentioned part list as NSP are not supplied.

Ref. No.	Part No.	Description	NOTE
-	-	L-SW PWB	NSP
-	-	D-SWPWB	NSP
-	-	MD PWB	NSP
IC101	8752-080-95	CXA2523AR	
IC102	1781-569-21	90 MHz	
IC103	8729-903-10	FMW1-T-148	
IC104	8759-689-63	RH5RZ35CA-TI	
IC121	8752-404-64	CXD2662R	
IC122	8759-234-20	TC7S08F	
IC125	8759-498-44	MSM51V4400D-70TSK	
IC152	8759-574-24	BA5984FP-E2	
IC171	8759-640-39	BR24C02F-WE2	
IC181	8759-523-35	TC74ACT02FT(EL)	
IC201	8759-919-21	CXP740010-048R	
IC301	8759-689-64	AK4522VF-E2	
Q101,Q163	8729-028-91	DTA144EUA-T106	
Q102	8729-026-52	2SA1576A-T106-QR	
Q162	8729-101-07	2SB798-T1DK	
Q181	8729-018-75	2SJ278MY	
Q182	8729-017-65	2SK1764KY	
Q303	8729-028-73	DTA114EUA-T106	
D101	223233R1	1SS355TE-17	
D181,D183	8719-046-87	F1J6, Diode	
X201	1767-179-31	12 MHz, Crystal	
SW1~4	1771-092-21	Push switch(1key)	
SW5	1771-327-11	2pin push switch (2key)	
CN101	1691-385-21	FFC/FPC connector 21P	
CN102	1774-794-11	FFC/FPC connector 26P	
CN103	1779-341-11	FFC/FPC connector 23P	
CN104	1778-283-11	FFC/FPC connector 4P	
CN105	1779-345-11	FFC/FPC connector 7P	
CN107	-	FFC/FPC connector 5P	NSP
CN110	1779-353-21	FFC/FPC connector 5P	

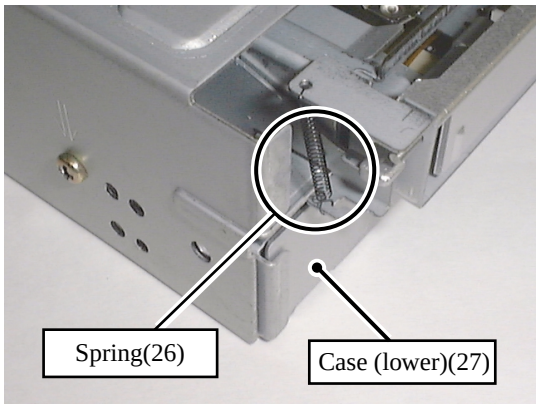
MD MECHANISM DISASSEMBLY

1 MD Mechanism KMK-260BCN

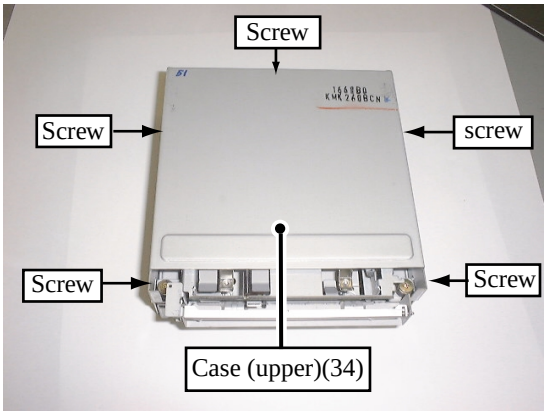
2 Remove the spring(Z3) from the door MD(Z3).



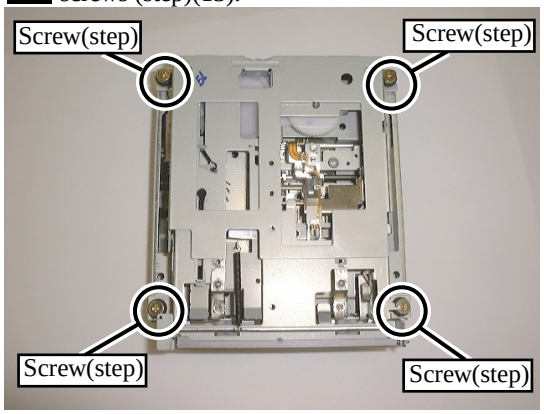
3 Remove the spring(26) from the case (lower)(27).



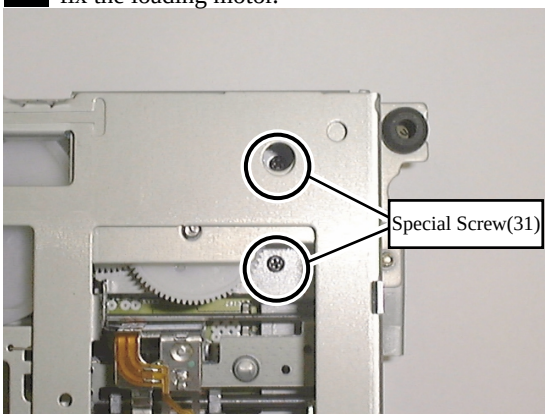
4 Remove the case (upper)(34) by unscrewing the five screws.



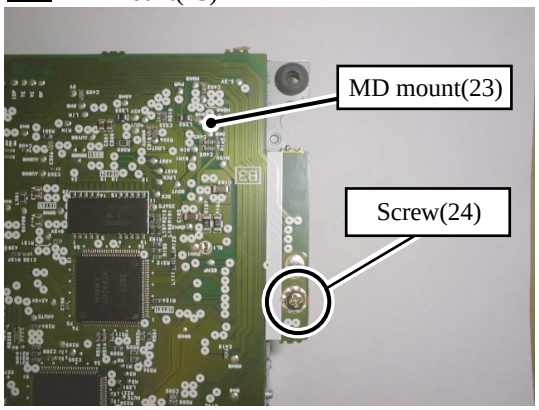
5 Remove the case (lower)(27) by unscrewing the four screws (step)(13).



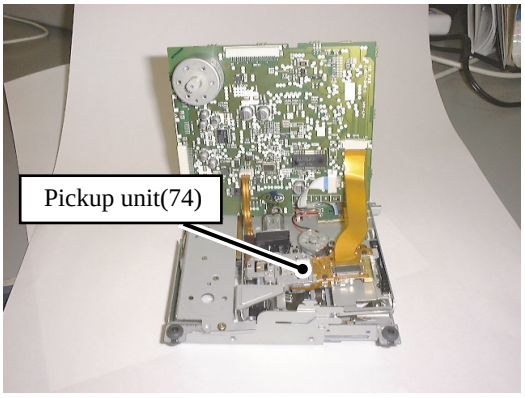
6 Remove the two special screws(31)used to fix the loading motor.



7 Remove the screw(24) used to fix the MD mount(23)



8 Keep the MD mount(23) upright.

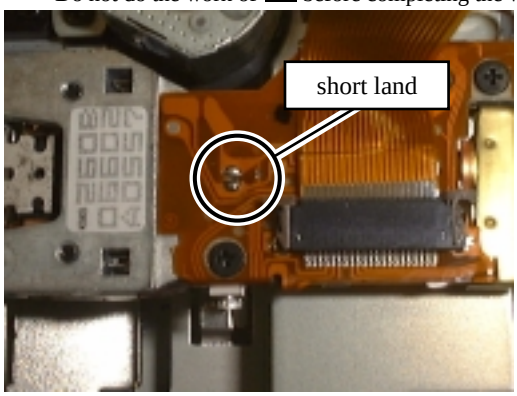


MD MECHANISM DISASSEMBLY

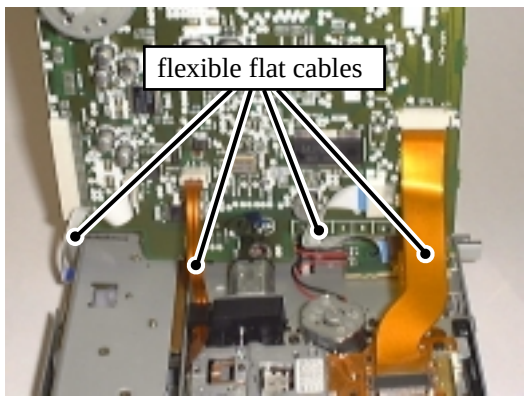
9 Short circuit with solder the short land on the pick-up unit(74).

[NOTE]

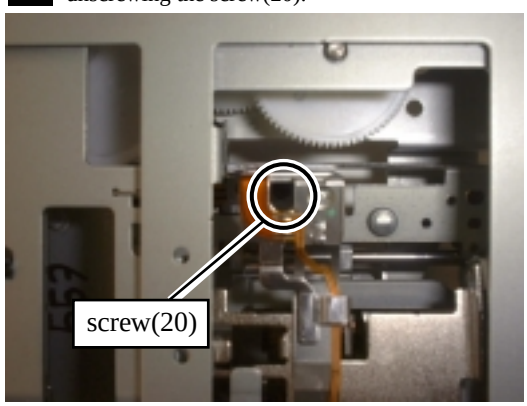
Do not do the work of **8** before completing the work of **9** .



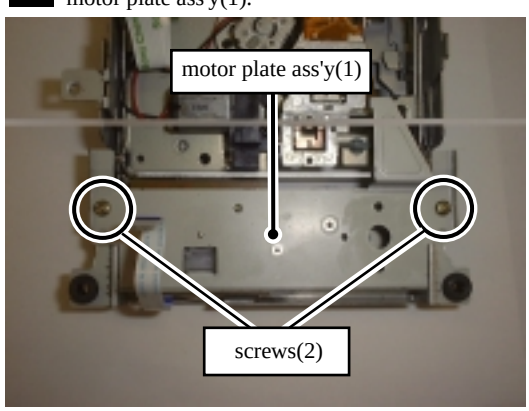
10 Disconnect the four flexible flat cables.



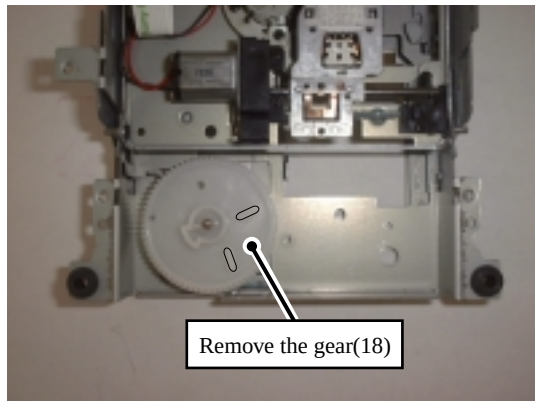
11 Remove the MD overwrite-head(21) by unscrewing the screw(20).



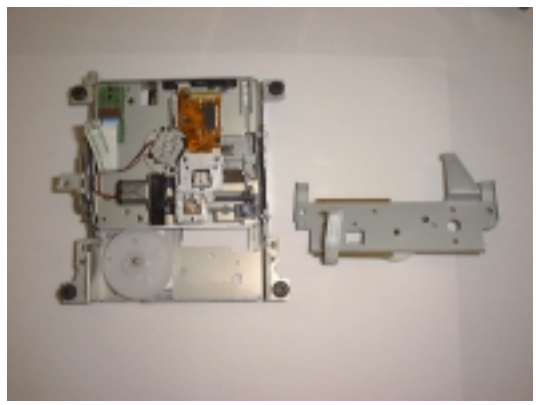
12 Remove the two screws(2) used to fix the motor plate ass'y(1).



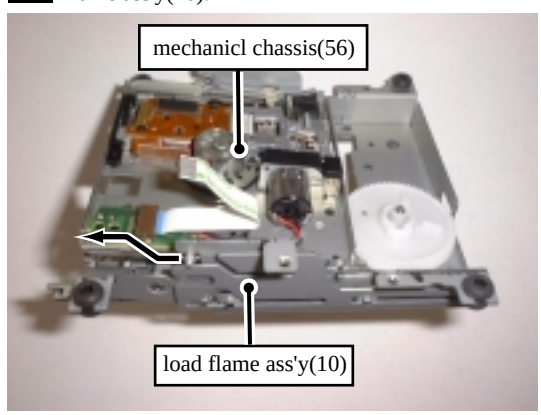
13 Remove the gear(18).



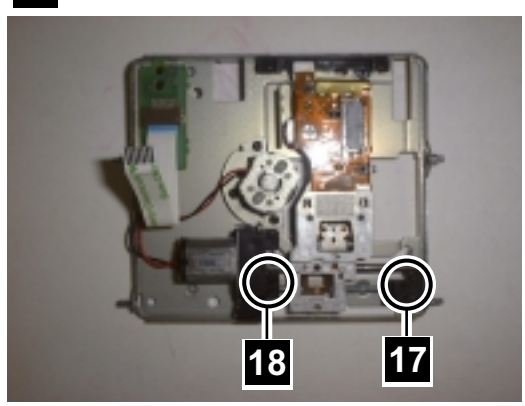
14 Remove the motor plate ass'y(1).



15 Remove the mechanical chassis(56) from the load flame ass'y(10).

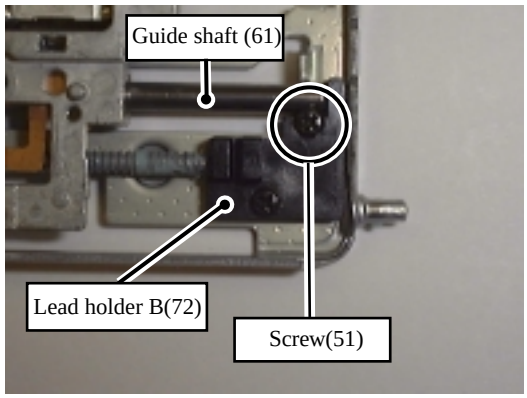


16 Load flame ass'y(10)

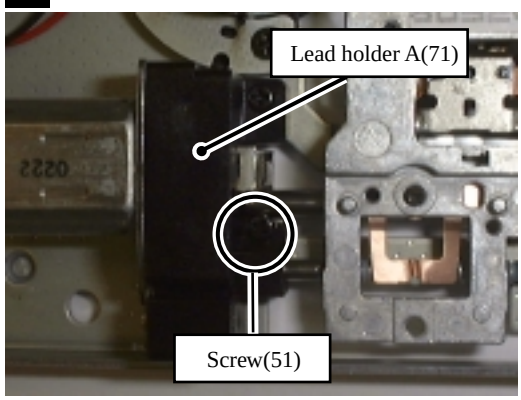


MD MECHANISM DISASSEMBLY

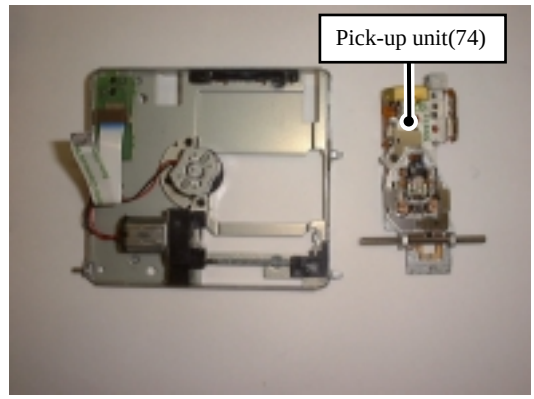
17 Remove the screw(51) used to fix the guide shaft(61).



18 Loosen the screw(51) used to fix the guide shaft (61).



19 Remove the pick-up unit(74).



20 Pick-up unit(74) is exchanged.

MD MECHANISM REASSEMBLY

1. To reassemble each mechanism, reverse the applicable disassembling procedure.
2. Do not do unsoldering short land on the pick-up unit before connecting the flexible flat cables.
3. When motor plate ass'y is installed in the MD mechanism, it is necessary to note the position of the gear. And it is necessary to place the push switch on L-SW prited circuit board (3) and note not getting crowded.

MD RECORDING ADJUSTMENT PROCEDURES

1.TEST MODE

1. Precaution for using the test mode

(1) It is necessary to adjust in the test mode.

(2) Make clear the test mode after ending the adjustment.

(3) In the following, the rotation of the disc dose not stop even if EJECT key is pushed.

CPLAY MODE , CREC MODE

Take out the disc pushing EJECT key after the rotation of the disc is stopped pushing EDIT/CLEAR/NO key once.

(4) In the following, the function of the mis-deletion prevention becomes invalid.
Note when you use the disc not deleted for the adjustment.

LDPWR ADJUST, LDPWR CHECK, CREC MODE, CPLAY MODE, EFBAL ADJUST
and press the REC key.

2. Setting the test mode

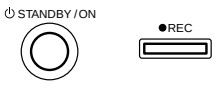
(1) The power supply code is inserted in the wall outlet.

(2) Press the STANDBY/ON key

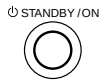
(3) The input selector is put into the state of MD.

(4) The set is put into the state of the standby once pushing the STANBY/ON key.

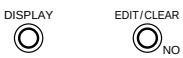
(5) While hold down REC key at the standby mode, press STANDBY/ON key to set the power unit on.



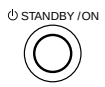
(6) The set is put into the state of the standby again pushing the STANDBY/ON key.



(7) While hold down EDIT/CLEAR NO key, press DISPLAY key.



(8) Press the STANDBY key to set the unit power on.



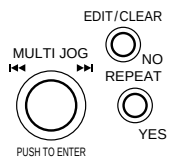
The display shows TEMP ADJUST indicating that the test mode has been selected.

3. Exiting the Test Mode

Unplug the power supply coad from the wall outlet.

4. Basic operation of each operation key

All the operations are done with MULTI JOG key, REPEAT/YES key, and EDIT/CLEAR/NO key.



Key name	Function
MULTI JOG I<< >>I	Changes the parameter and test item.
MULTI JOG PUSH REPEART/YES	Proceeds to the next step or finalizes the operation.
EDIT/CLEAR NO	Returns to previous step or abouts the operation.

5. Selection of test mode

The multijog key is turned in the state of **2 - (8)** and a necessary test mode is selected.
It is possible to escape from the mode to other test modes by mistake when selecting by pushing the EDIT/CLEAR/NO key.

Test mode name	Display	Function
TEMP ADJUST	*TEMP ADJUST*	Temperature compensation offset adjustment
LD POWER ADJUST	*LD POWER ADJUST*	Laser power adjustment
LD POWER CHECK	*LD POWER CHECK*	Confirmation of laser power.
LOAD CHECK	*LOAD CHECK*	Confirmation of lodhing operation.
SLEVEL CHECK	*SLEVEL CHECK*	Operation confirmation of object lens of pickiup
EFBALANCE ADJUST	*EFBALANCE ADJUST*	Traverse adjustment
FBIAS ADJUST	*FBIAS ADJUST*	Focus bias adjustment
FBIAS CHECK	*FBIAS CHECK*	Comfirmation of focus bias.
CPLAY MODE	*CPLAY MODE*	Continuous play mode
CREC MODE	*CREC MODE*	Continuous recording mode
EEP MODE	*EEP MODE*	The data memorized in non-volatile memory is rewritten.
POINT MODE	*POINT MODE*	In CREC mode and the CPLAY mode, the accessed address is changed.

2. PRECAUTIONS

1. Precaution for chacking laser emmition from the laser diode.

Never look into the laser diode when checking the laser emmition durring adjustments.
During so may cause loss of your eyesight.

2. Adjustment information.

Test mode	Replacement pickup	Replacement PC board	Replacement other parts
TEMP ADJUST	×	○	○
LDPR ADJUST	○	○	○
EFBAL ADJUST	○	○	○

3. Measuring instruments and test disc.

Measuring instruments
Laser power meter : LPM-8010 (manufactured by LEADER)
Oscilloscope : Band width 40 MHz or higher calibrate the probe prior to measurement.
Digital volt meter : Digital volt meter
Test disc
Standard disc for recording/playback)

4. Precautions for adjustments.

When an oscilloscope is used to monitor signal waveforms, do not connect the VC to GND inside the oscilloscope.

3. ADJUSTMENT

1. Temperature compensation offset adjustment

Save the temperature data at that time in the non-volatile memory as 25 ℃ referance data.

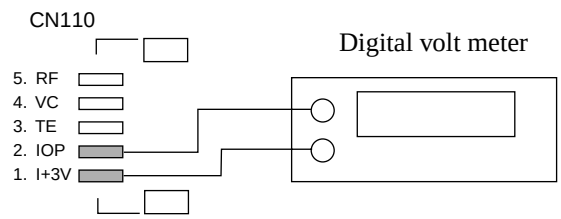
[Note]

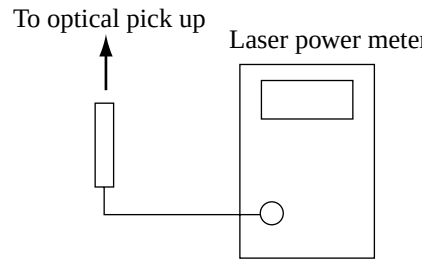
1. Usually, do not perform this adjustment.
2. Performe this adjustment in an ambient temperature of 22 ℃ to 28 ℃.
3. When D101 has been replaced, perform this adjustment after the temperature of this part has become the ambien temperature.

[Procedure]

Operation	Display	
1.Enter the test mode select "TEMP ADJUST"	*TEMP ADJUST*	
2. Press the MULTI JOG knob.	*TEMP= # #*	Present temperature data is shown.
3. Press the MULTI JOG knob, when data is memorized.	*TEMP # # SAVE*	
	TEMP ADJUST	The adjustment value of the temperature is memorized in non-volatile memory.
4. Press the EDIT/CLEAR/NO keyb,when data is not memorized.	*TEMP ADJUST*	

2. Laser power adjustment





[Preparation]

1. Connect the digital voltmeter to between IOP and I+3V of test point CN110.
2. Install the laser power meter on the objective lens of the laser pick-up.

[Procedure]

Operation	Display	
1. Enter the test mode select "LD POWER"	*LDPWR ADJUST*	
2. Press the MULTI JOG knob.	*LD 0.9mW $ # #*	
3. Rotate the MULTI JOG knob so that the reading of laser power meter becomes from 0.86mW to 0.92 mW.		
4. Range of the laser power meter is set in 10mW.		
5. Press the MULTI JOG knob.	*LD SAVE $ # #*	
	LD 7.0mW $ # #	The adjustment value of the laser power is memorized in non-volatile memory.
6. Turn the MULTI JOG knob so that the reading of laser power meter becomes from 6.9mW to 7.1mW.		
7. Press the MULTI JOG knob.	*LD SAVE $ # #*	
	LD 0.9mW $ # #	The adjustment value of the laser power is memorized in non-volatile memory.

[NOTE]
Do not continue the luminescence of 7mW of the laser power for 15 seconds or more.

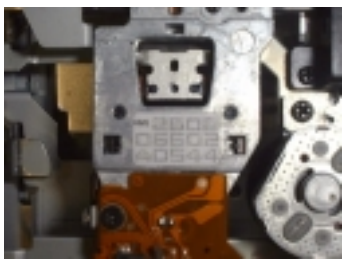
Do not continue the luminescence of 7mW of the laser power for 15 seconds or more.

3. Laser power check

[Procedure]

Operation	Display	
1. Install the laser power meter on the objective lens 2. Enter the test mode select "LDPWR CHECK" 3. Press the MULTI JOG knob. 4. Verify that the laser power meter reading **from 0.85mW to 0.91mW.**	*LD PWR CHECK* *LD 0.9mW $ # #*	
5. Range of the laser power meter is set in 10mW. 6. Press the MULTI JOG knob. 7. Verify that the the laser power meter reading is below the specification. **[Specification] 7.0 mW± 0.1mW**	*LD 7.0mW $ # #*	
8. Verify that the the laser digital volt meter leading is below the specification. **[Specification] Optical pick-up value ± 10%**		

Pick-up unit



In this case

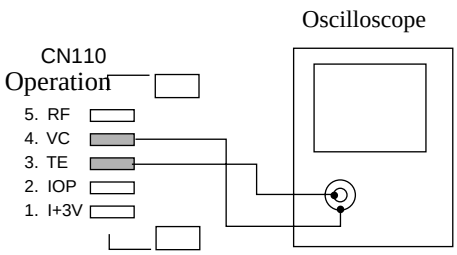
KMS2606
06602
A0544

Iop = 54.4 mA

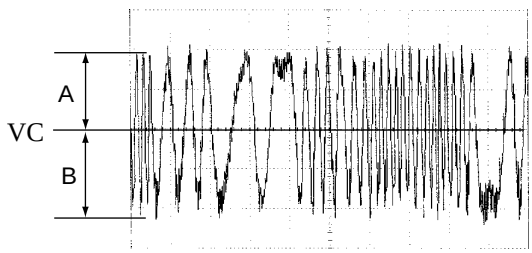
Iop = Digital volt meter reading(mV / 1 Ω)

9. Press the EDIT/CLEAR /NO key.	*LD PWR CHECK*	

4. EF balance adjustment



Traverse waveform



Specification : A = B

[Preparation]

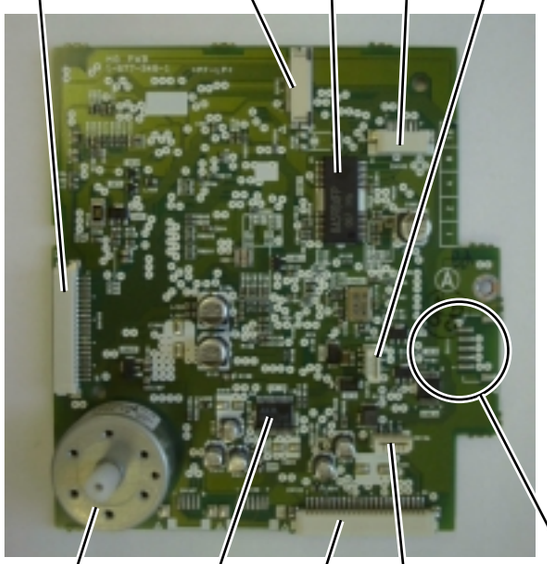
1. Connect the oscilloscope to between TE and VC of test point CN110.
2. Insert the test disc.

[Procedure]

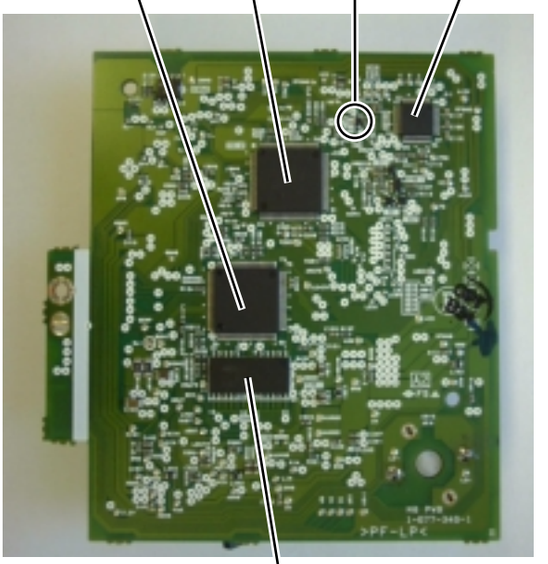
Operation	Display	
1. Enter the test mode select " EFBAL ADJUST" . 2. Press the MULTI JOG knob. 3. Rotate the MULTI JOG knob so that the readings of the oscilloscope becomes the specified valure. In this adjustment, waveform varies at intervals of approximately 3%. Adjust the waveform so that the specified value is satisfied as possible.	*EFBAL ADJUST* *EFBAL # # MO-W*	
4. Press the MULTI JOG knob.	*EFBAL = # # SAVE* *EFBAL MO - W* *EFBAL ADJUST*	The adjustment value is memorized in non-volatile memory.

MD MOUNT VIEW

MD Mount (side A)



MD Mount (side B)



Test point for MD adjustment

CN110

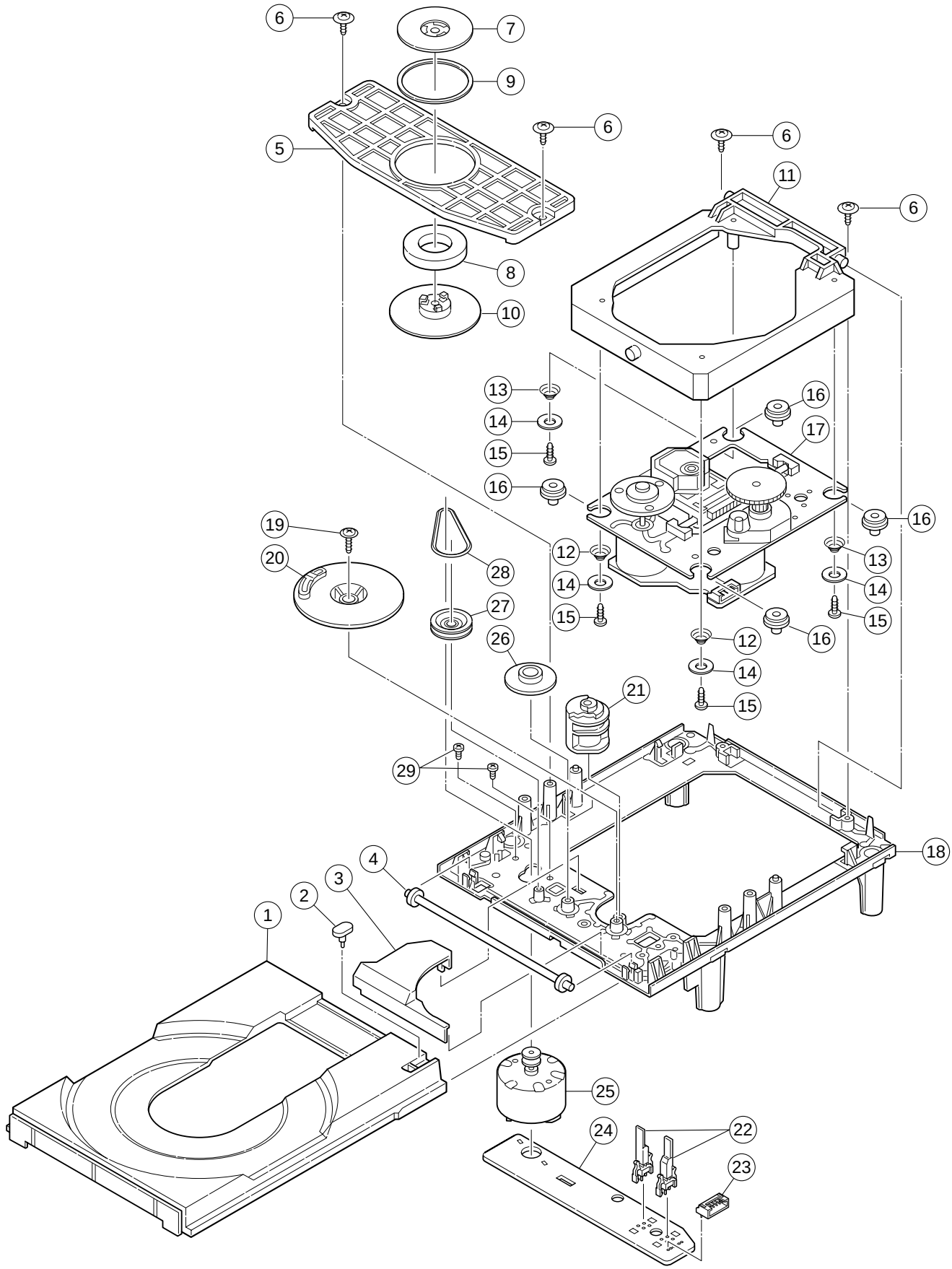
5. RF
4. VC
3. TE
2. IOP
1. I+3V

MESSAGES

The following table explains the messages that appear in the display.

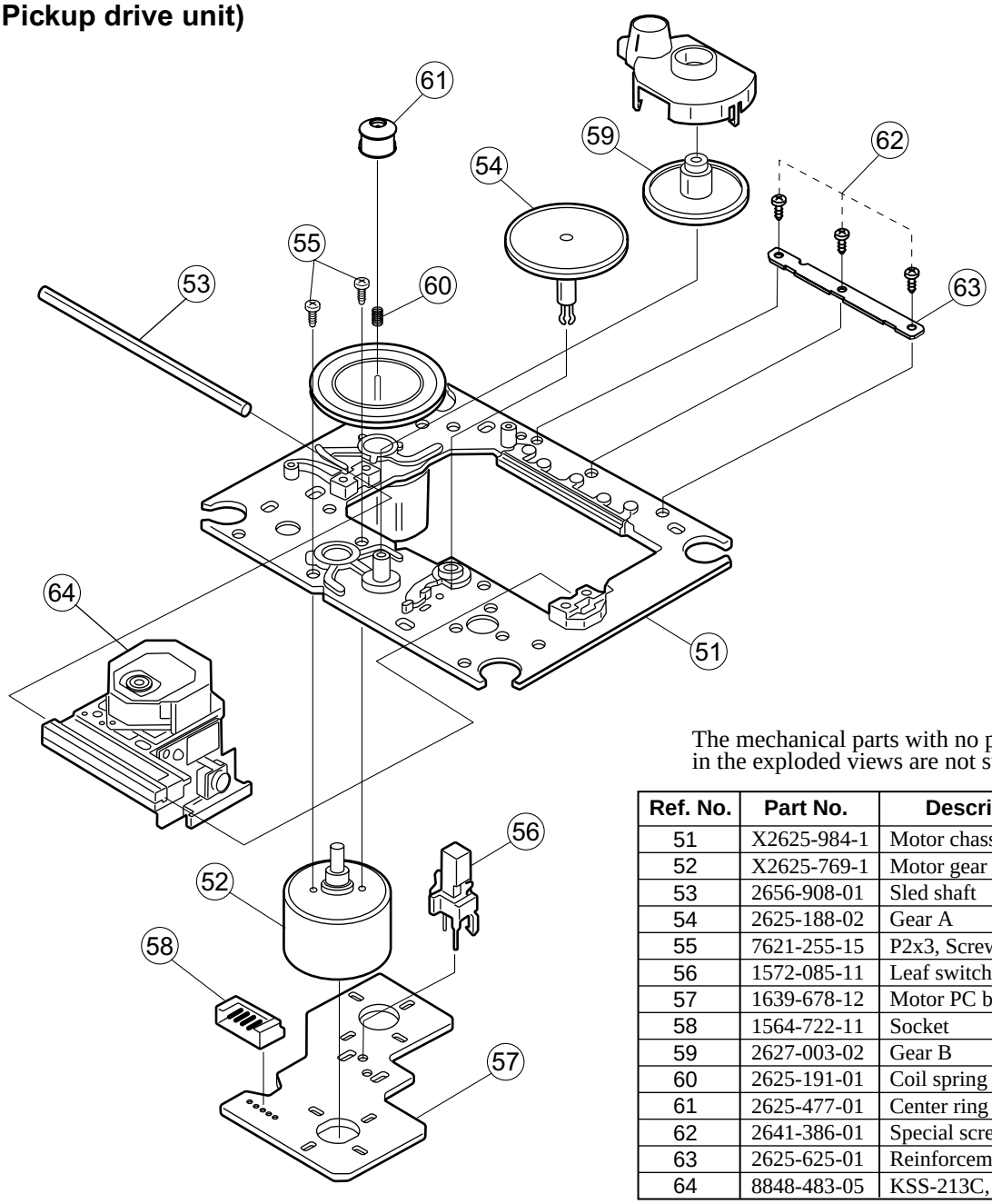
Message	Meaning	Message	Meaning
Blank Disc	A recordable MD without disc or track names is inserted.	***Name Full***	The naming capacity of the disc or unit has reached its limit.
Cannot Copy	An attempt was made to make a second digital copy from a digitally dubbed MD	***No Change***	The name has not been changed.
		No Disc	There is no disc in the unit.
Cannot Edit	You tried to edit a playback-only disc.	***No Track***	The inserted disc has a disc name but no tracks
Cannot Rec	You tried to record onto a playback-only disc.	***Over***	In pause mode (when playing is paused), ►► (Fast Forward) was pressed to the end of the disc.
Cannot Set	You tried to set a timer while another timer is operating.	***Protected***	The inserted disc is record-protected.
D.In Unlock	The digital equipment (CD player, DAT, etc.) is not connected properly, or else not operating properly.	***Recording***	You tried to switch to another source while recording or perform a CD or tuner operation that is disabled during recording.
Disc Error	The disc is abnormal (scratched or missing a TOC).	***Retry Error***	The recording attempt failed due to consecutive disturbances from scratches on the MD or from applied vibration.
Disc Full	The disc is full		
Full	You tried to enter a character over the maximum character capacity while naming.	***Sorry***	You tried to (a) combine tracks that cannot be combined, (b) divide a track at its beginning, or (c) edit a disc using a function not available due to MD system limitations.
Impossible	You tried to edit a disc using a function not available due to some reason other than the MD system limitation.		
MD Writing	The unit is writing the recorded or edited contents to the MD.	***Time Protect***	You tried to repeat double-speed dubbing using the same CD.
Mecha Error	An error occurred in the unit's internal mechanism.	***TOC Error***	The reading of the disc or the recording onto the disc failed.
Memory Full	You tried to store a 26th track or a 31st channel.		

CD MECHANISM EXPLODED VIEW (1)



CD MECHANISM EXPLODED VIEW(2)

(NCD-170S Pickup drive unit)



The mechanical parts with no part number in the exploded views are not supplied.

Ref. No.	Part No.	Description
51	X2625-984-1	Motor chassis ass'y
52	X2625-769-1	Motor gear ass'y
53	2656-908-01	Sled shaft
54	2625-188-02	Gear A
55	7621-255-15	P2x3, Screw
56	1572-085-11	Leaf switch
57	1639-678-12	Motor PC board
58	1564-722-11	Socket
59	2627-003-02	Gear B
60	2625-191-01	Coil spring
61	2625-477-01	Center ring
62	2641-386-01	Special screw, 2*5
63	2625-625-01	Reinforcement board
64	8848-483-05	KSS-213C, Pickup

Ref. No.	Part No.	Description
1	2646-290-01	Tray
2		Stopper
3	2625-544-01	Gear cover
4	2625-535-01	Tray Gear
5	2625-546-01	Chucking plate
6		PTPWH2.6*7,Screw
7	2625-537-01	Chucking yoke
8	1452-493-21	Magnet
9	2625-541-02	Damper
10	2646-291-01	Chucking pulley
11	2646-288-01	Sub chassis
12	2627-236-01	Coil spring (front)
13	2627-235-01	Coil spring (back)
14	2646-289-01	Washer
15		P2.6*10,Screw

Ref. No.	Part No.	Description
16	2627-234-01	Insulator
17		KSM-213CCM
18	2625-552-06	Main chassis
19	3319-501-51	PTPWH2.6*16, Screw
20	2625-547-01	Drive Gear
21	2625-545-04	Control cam
22	1692-667-11	Leaf switch
23	1564-721-11	Socket
24	1640-523-11	Loading PC board
25	X2625-117-1	Loading motor
26	2625-274-02	Middle gear
27	2625-536-02	Loading pulley
28	3653-387-00	LM belt
29		B2.6*2.5, Screw

CD ADJUSTMENT PROCEDURES

Preparation

Set the trimming resistors R123 to center.

Focus gain adjustment

1. Set the output of the audio oscillator to 1kHz and 1～1.5Vp-p.
2. Connect the oscilloscope and audio oscillator as shown below. (Refer to Fig-1)
3. Load the test disc YEDS-18 on the tray and play the track 2.
4. Adjust the trimming resistor R123 so the signal of channel 2 on the oscilloscope becomes 1.25 times of channel 1. (Refer to Fig-2)
5. Remove the oscilloscope and audio oscillator.

Fig-1

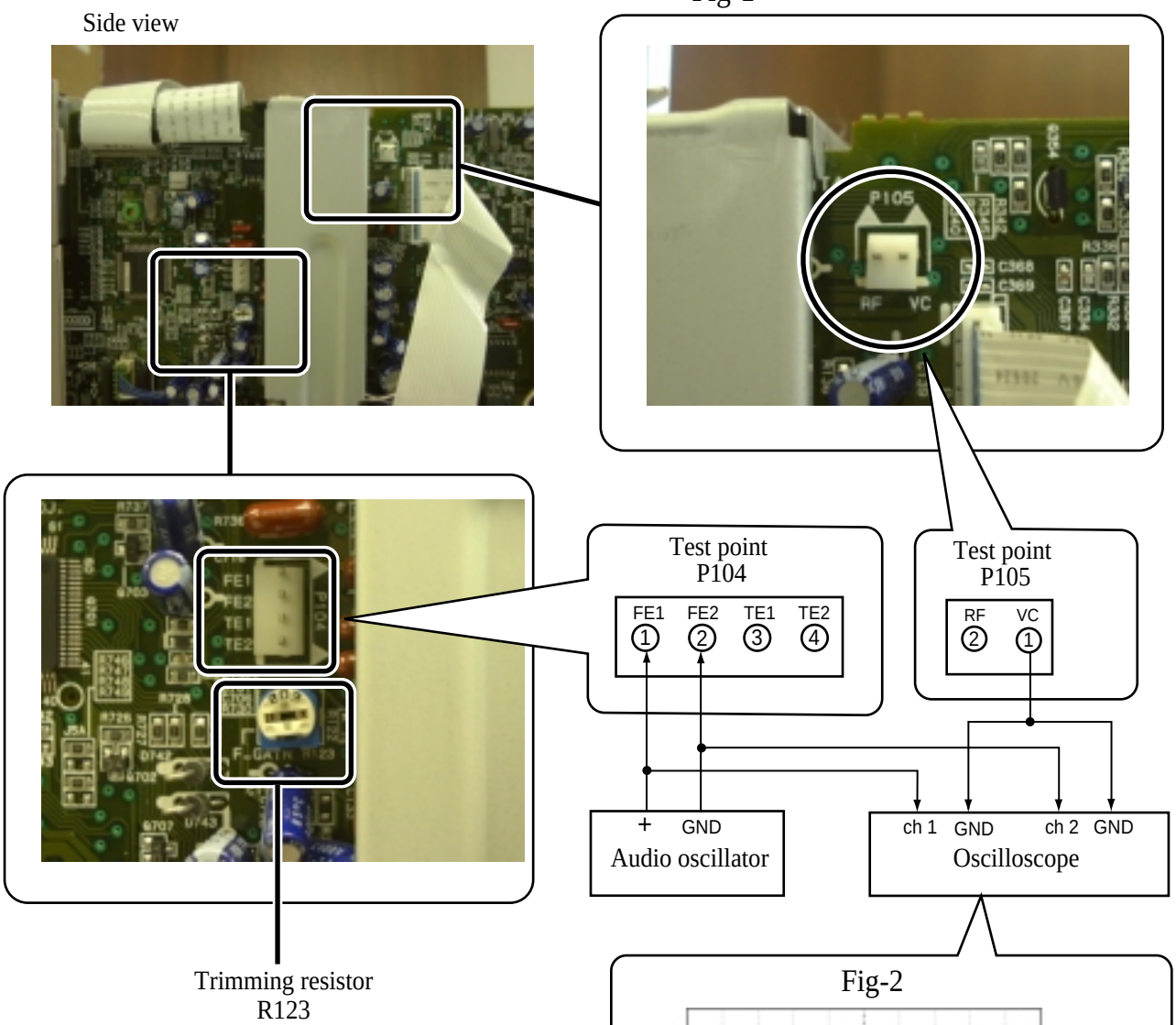
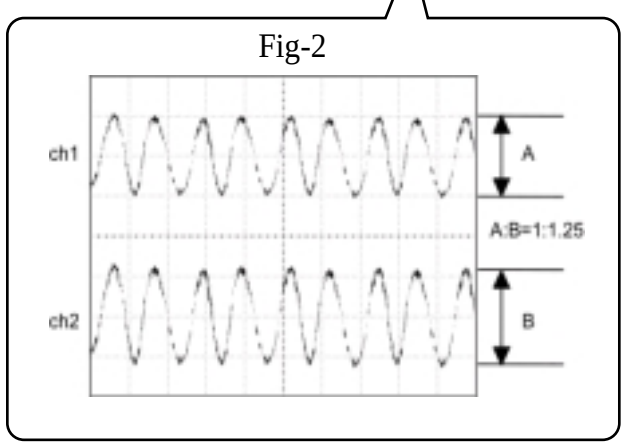
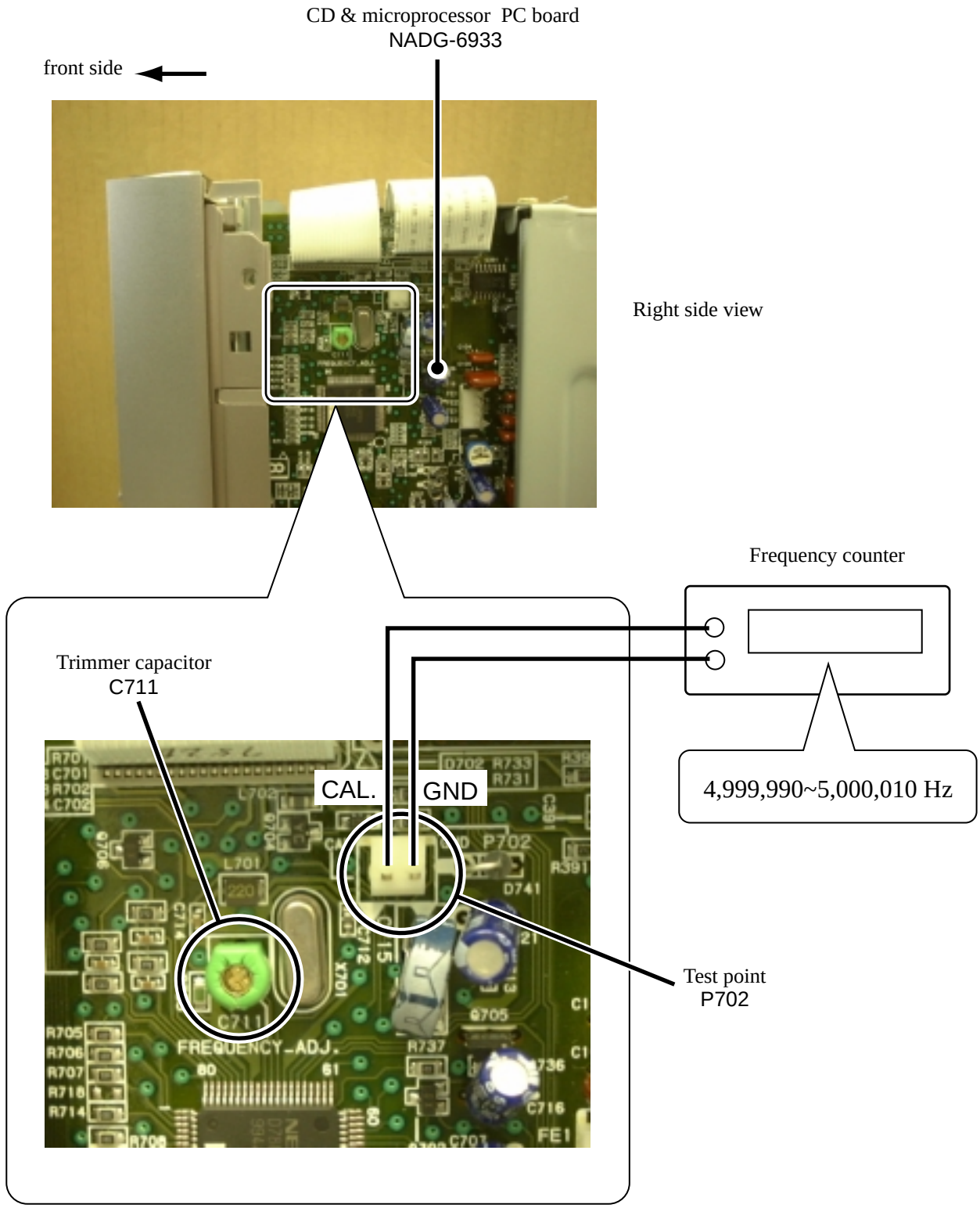


Fig-2



ADJUSTMENT OF CLOCK FREQUENCY

1. Remove the top cover.
2. Connect the frequency counter to the terminal P702 on the CD & microprocessor PC board (NADG-6939)
3. While hold down CD STOP key, press STANDBY/ON key to set the test mode.
   (All segments on FL tube light on and scroll the character for FL tube test.)
4. Adjust the trimmer capacitor C711 so that the reading of frequency counter becomes 5000000 ±10 Hz.



HANDLING OF OPTICAL PICKUP

The laser diode in the optical pickup block is so sensitive to static electricity,surge current and etc. That the components are liable to be broken down or its reliability remarkably deteriorated. During repair,carefully take the following precautions.

1. Work procedure

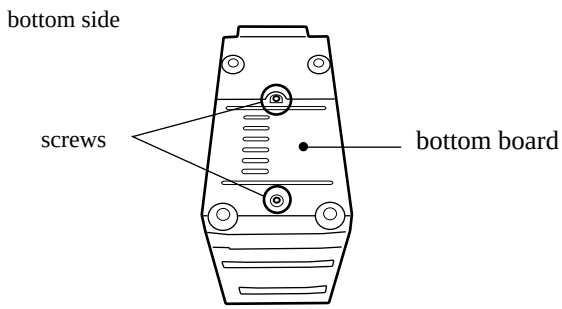
Disasembling

1 → **2** → **3** → **4** → **5** → **6** → **7**

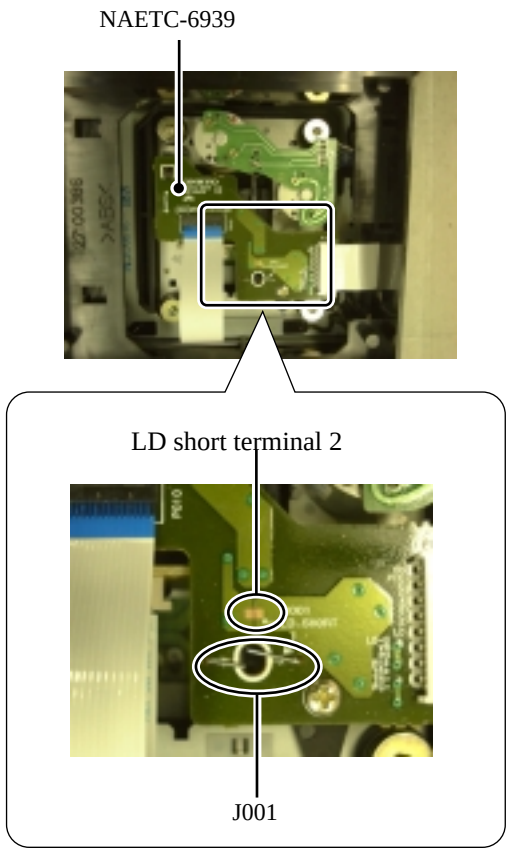
Assembling

7 → **6** → **5** → **4** → **3** → **2** → **1**

1 Remove the two machine screws and remove the bottom board is detached.

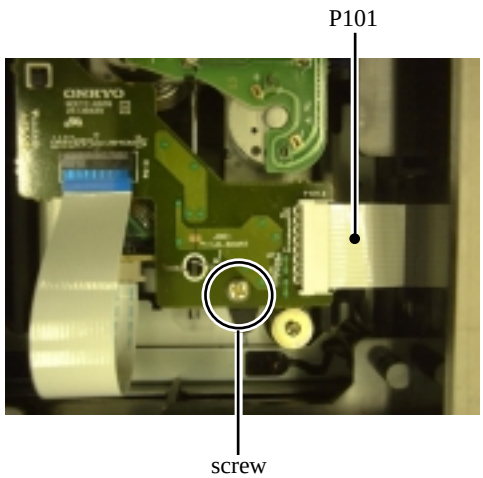


2 Connect J001 (or LD short terminal 2) on CD connector PC board (NAETC-6939) first.

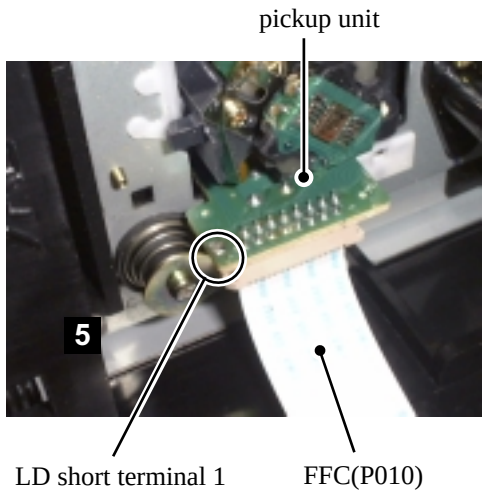


3 Remove FFC P101 on the CD connector PC board.

4 Remove the screw.



5 Solder the LD short terminal 1 on pickup unit.



6 Disconnect the flexible flat cable P010.

7 Replace the pickup.

2. Exchange picking up the MD mechanism done according to the work procedure which has been described to method (P21) of decomposing the MD mechanism.

CHASSIS EXPLODED VIEW PARTS LIST

REF. NO.	PART NO.		DESCRIPTION
1	27111174A		Front bracket
2	28325814		Knob, AOC
3	28325815		Knob, AT
4	28191895		Clear plate, RE
5	27130848		Bracket, MD
6	838430107		3TTB+10S(BC), Special screw
7	838130088		3TTB+8B, Self tapping screw
8	27100386		Chassis
9	28141435		Cushion
10	27130849		Bracket, PT
11	27130850		Bracket, CD
12	27130851		Bracket, U
13	27160478		Heat sink
14	801433		3SMS8W.SW+14B(BC), Special screw
15	28175263		Isolated plate, A
16	27150453		Shield plate
17	27300750	⚠	Busing, cord
18	830440089		4TTC+8C(BC), Self tapping screw
19	838430068		3TTB+6B(BC), Self tapping screw
20	28184786A		Cover, back
22	29110082		Tape, cross
23	27170332		Bottom board
24	28191893		Clear plate, top
25	28184788		Top cover
26	838930088		3TTB+8B(UN), Self tapping screw
27	27212237B		Front panel
28	28191896		Clear plate
29	28198912		Facet
31	28148456A		Tray, CD
32	28325819		Knob, Volume
35	28325817A		Knob, Jog
36	27191133		Holder, MD
37	27191134		Holder, S
38	28175266		Isolated plate, MD
39	27122756		Rear panel
40	831430088		3TTW+8B(BC), Self tapping screw
41	29362706		Spec. label<DT>
	29362707		Spec. label<GT>
42	29362285	⚠	Label caution<GT>
43	29360687	⚠	Label , class1
F901	252083	⚠	0.4A-SE-EAWK, Fuse<GT>
	252157	⚠	1.25A-UL/T-237, Fuse<DT>
J22	1F999010		Faston AS
P010C	2042161012		NCFC2-161012, Flexible flat cable
P101C	2046162012		NCFC6-162012, Flexible flat cable
P102C	2009990645		NSAS-12P0895, Socket AS
P103C	20022391020		NSAS-10P0843, Socket AS
P203C	2044260172		NCFC4-260172, Flexible flat cable
P250C	2046151512		NCFC6-151512, Flexible flat cable
P391C	2044230162		NCFC4-230162, Flexible flat cable
P404C	2044150182		NCFC4-150182, Flexible flat cable
P752C	2045214012		NCFC5-214012, Flexible flat cable
P901	253237HIT	⚠	AS-CEE, Power supply cord<GT>
	253294HDK	⚠	AS-UC-2#18, Power supply cord<DT>

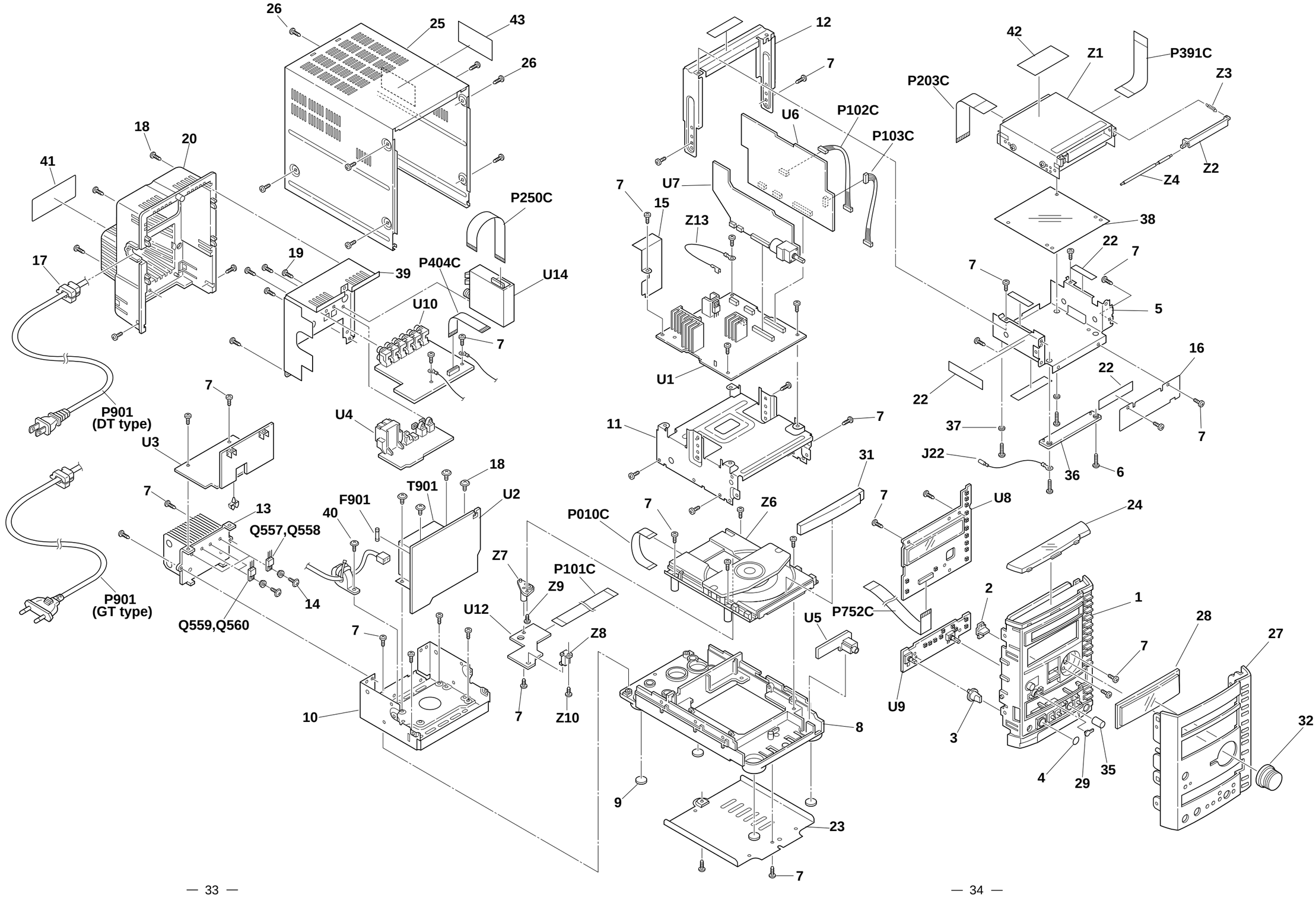
REF. NO.	PART NO.		DESCRIPTION
Q557	2203383 or	*	2SC3851-O or
, Q558	2203384	*	2SC3851-Y, Transistor
Q559	2203393 or	*	2SA1488-O or
, Q560	2203394	*	2SA1488-Y, Transistor
T901	2301467	⚠	NPT-1399D <DT>
	2301468	⚠	NPT-1399G, Power transformer<GT>
Z1	24650033		KMK-260BCN, MD Mechanism
Z2	24611660		Door, MD
Z3	24605828		Spring
Z4	24604139A		Shaft
Z6	24800018A		NCD-170S, CD mechanism
Z7	24840133		Boss, PCB
Z8	24840135		Boss, PCB3
Z9	838120080		2TTB+8P, Special screw
Z10	838426088		2.6TTB+8B(BC), Special screw
Z13	2061A12100		Crimp AS
U1	1A887528-1B		NAPS-6928-1B, Power supply circuit PC board ass'y<DT>
	1A887528-1C		NAPS-6928-1C, Power supply circuit PC board ass'y<GT>
U2	1A887529-1B		NAPS-6929-1B, Primary circuit PC board ass'y<DT>
	1A887529-1C		NAPS-6929-1C, Primary circuit PC board ass'y<GT>
U3	1A887530-1B		NAAF-6930-1B, Power amplifier circuit PC board ass'y<DT>
	1A887530-1C		NAAF-6930-1C, Power amplifier circuit PC board ass'y<GT>
U4	1A887532-1B		NAETC-6932-1B, Speaker terminal PC board ass'y<DT>
	1A887532-1C		NAETC-6932-1C, Speaker terminal PC board ass'y<GT>
U5	1A887034-1B		NAETC-7034-1B, Headphone jack PC board ass'y<DT>
	1A887034-1C		NAETC-7034-1C, Headphone jack PC board ass'y<GT>
U6	1A887533-1B		NADG-6933-1B, Microprocessor & CD circuit PC board ass'y<DT>
	1A887533-1C		NADG-6933-1C, Microprocessor & CD circuit PC board ass'y<GT>
U7	1A887534-1B		NAAF-6934-1B, Acoustic circuit PC board ass'y<DT>
	1A887534-1C		NAAF-6934-1C, Acoustic circuit PC board ass'y<GT>
U8	1A887535-1B		NADIS-6935-1B, Display circuit PC board ass'y<DT>
	1A887535-1C		NADIS-6935-1C, Display circuit PC board ass'y<GT>
U9	1A887536-1B		NASW-6936-1B, Control switch PC board ass'y<DT>
	1A887536-1C		NASW-6936-1C, Control switch PC board ass'y<GT>
U10	1A887537-1B		NASW-6937-1B, Selector circuit PC board ass'y<DT>
	1A887537-1C		NASW-6937-1C, Selector circuit PC board ass'y<GT>
U12	1A887539-1B		NAETC-6939-1B, CD connector PC board ass'y<DT>
	1A887539-1C		NAETC-6939-1C, CD connector PC board ass'y<GT>
U14	240135		TFCE1E512A, Tuner unit

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

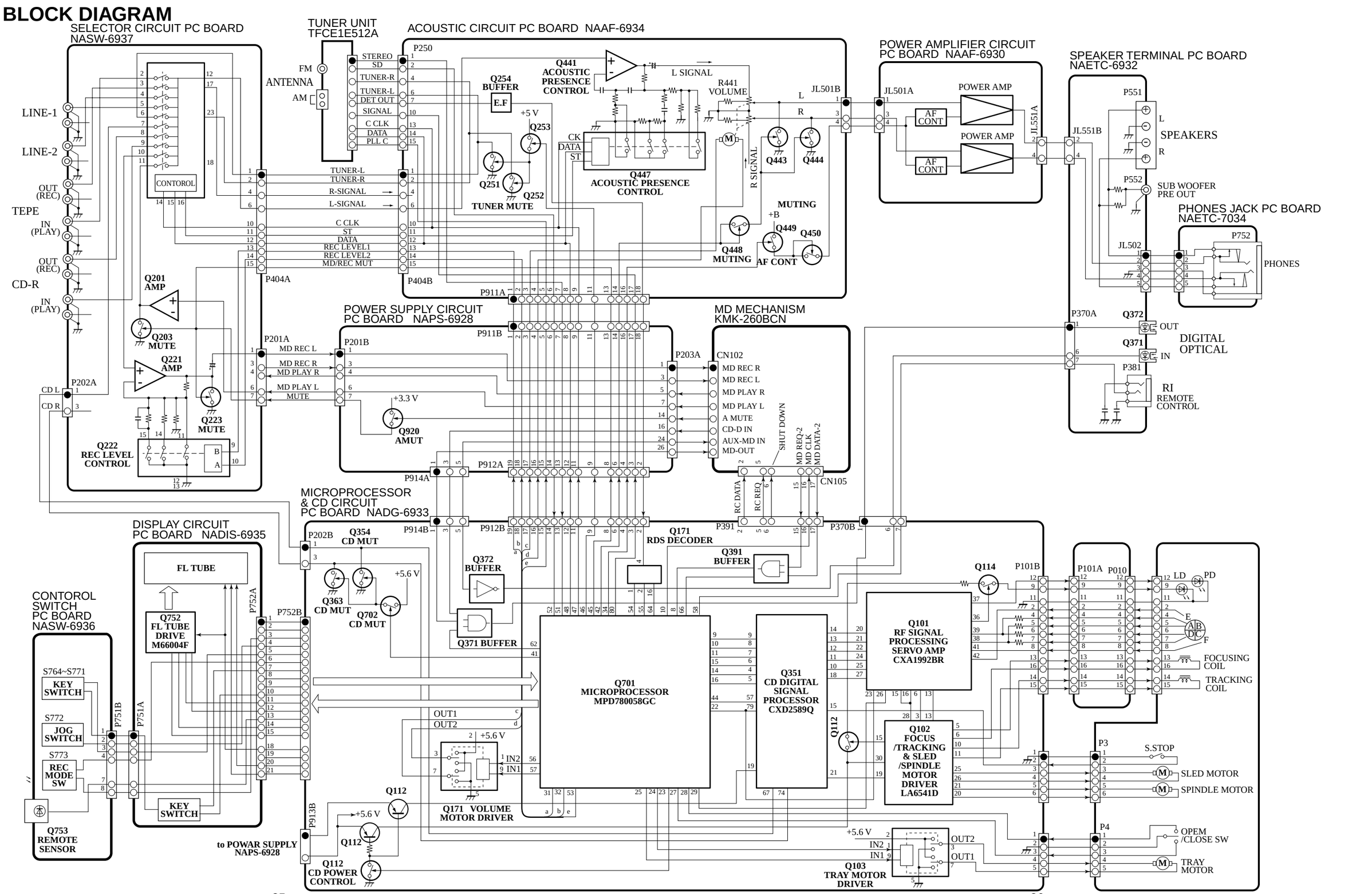
CAUTION : Replacement of the transistor of mark * ,if necessary, must be made from the same beta group (HFE) as the original type.

NOTE : <DT> : Taiwanese Model only
<GT> : Asian Model only

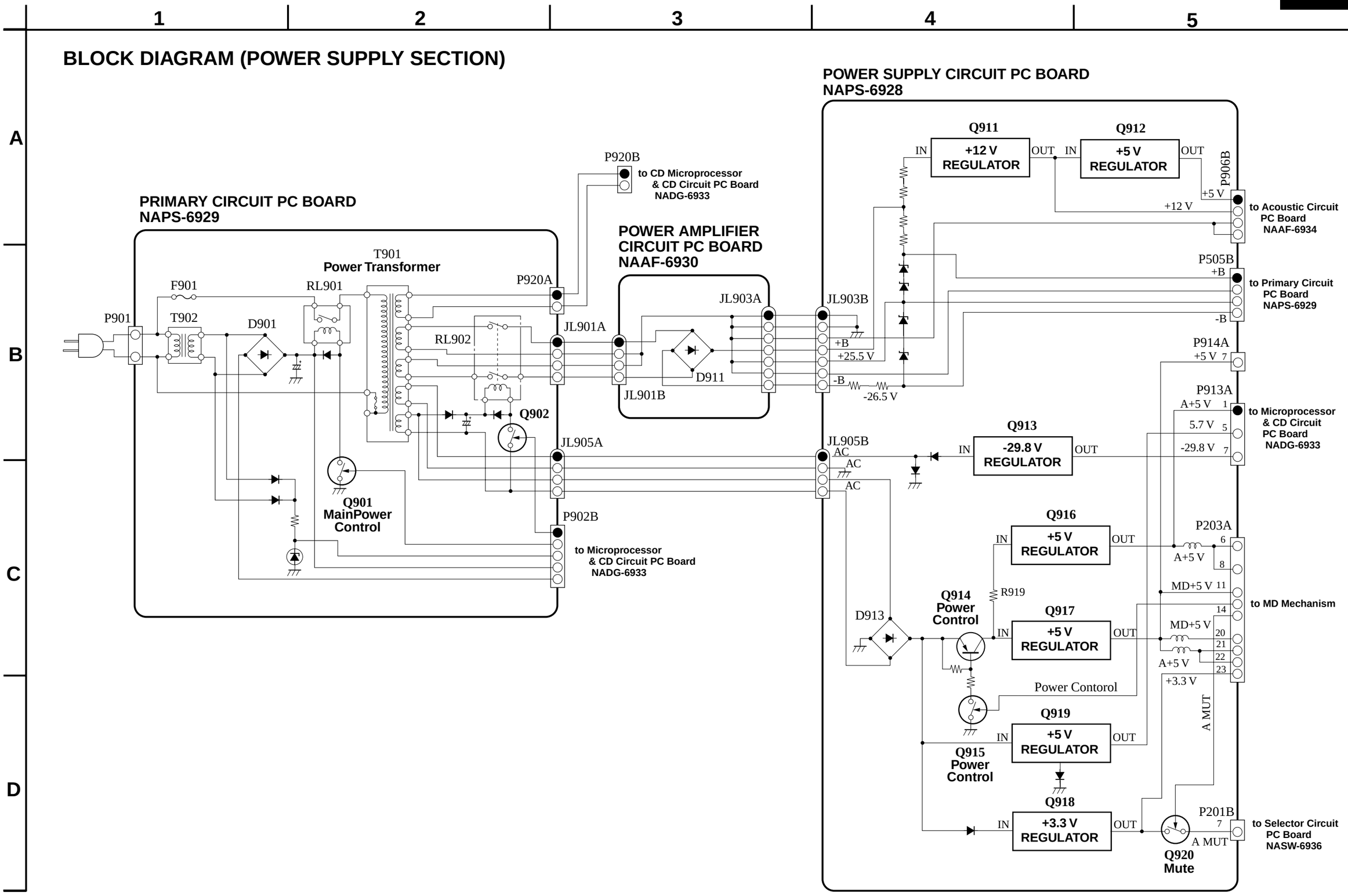
CHASSIS EXPLODED VIEW



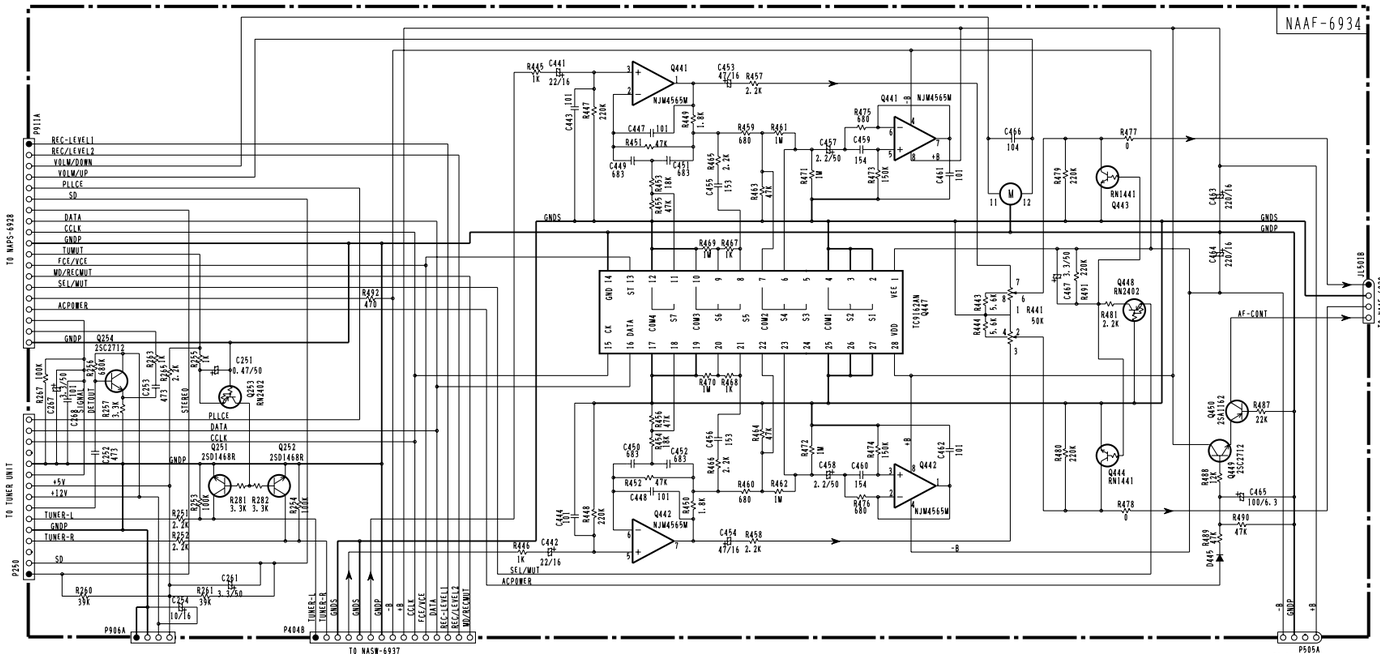
BLOCK DIAGRAM

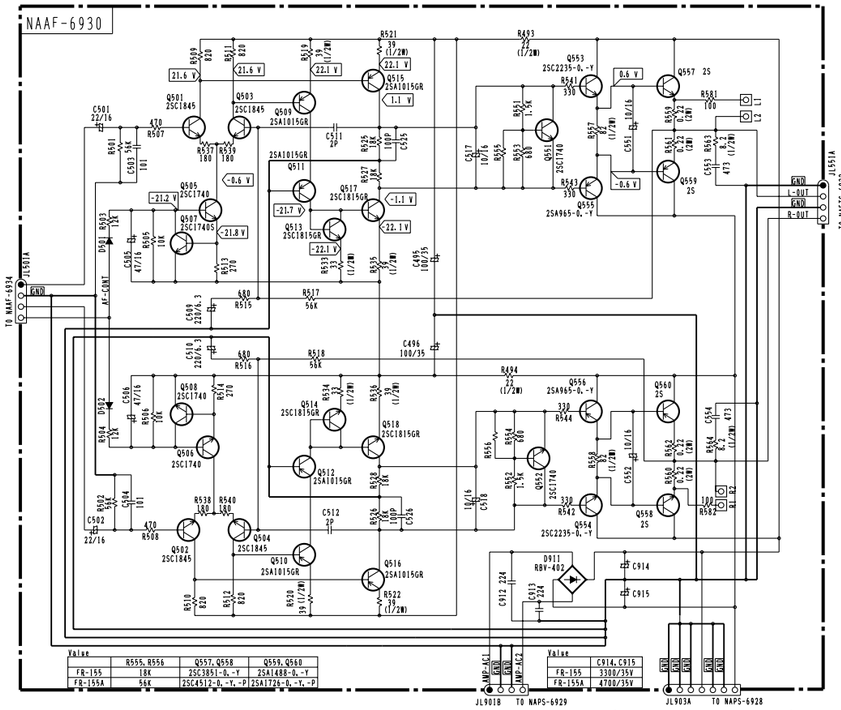


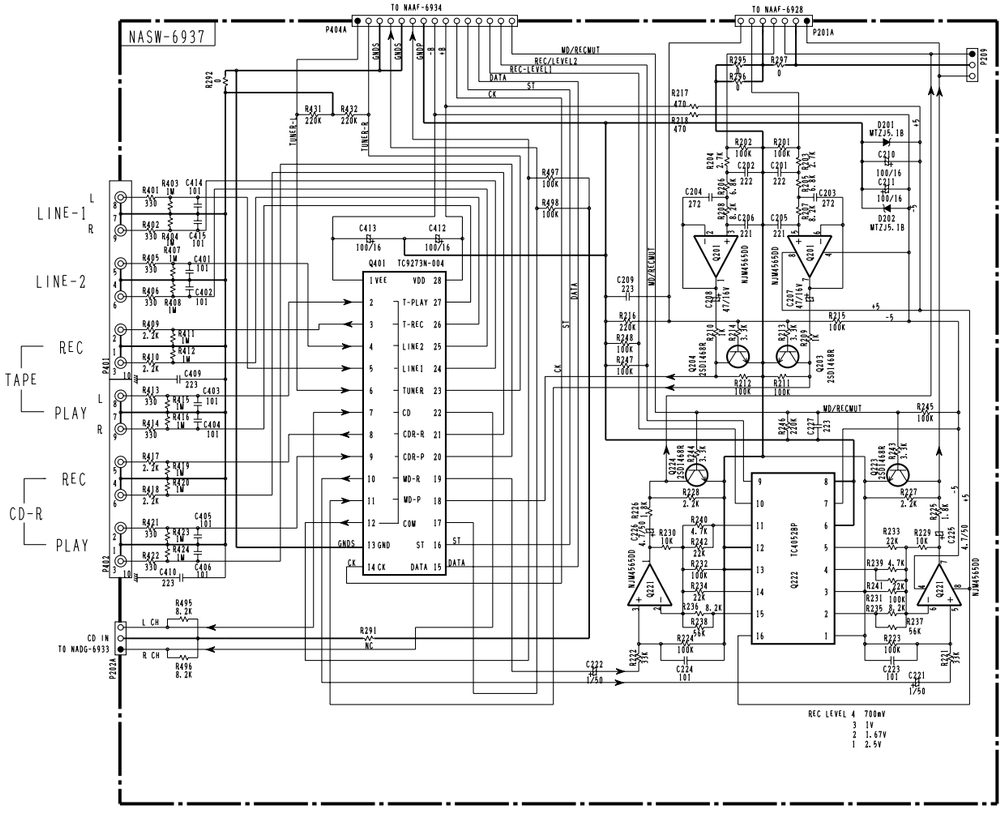
BLOCK DIAGRAM (POWER SUPPLY SECTION)

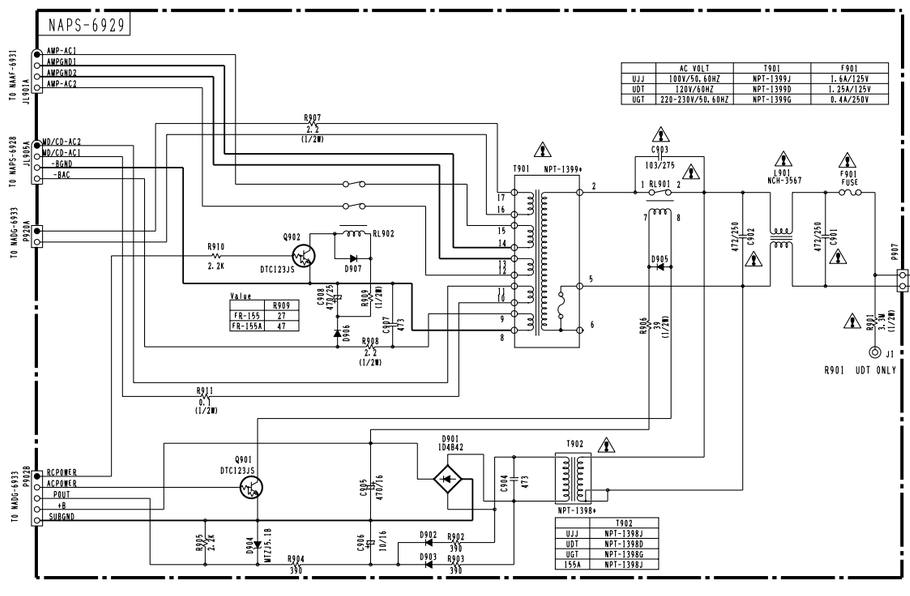


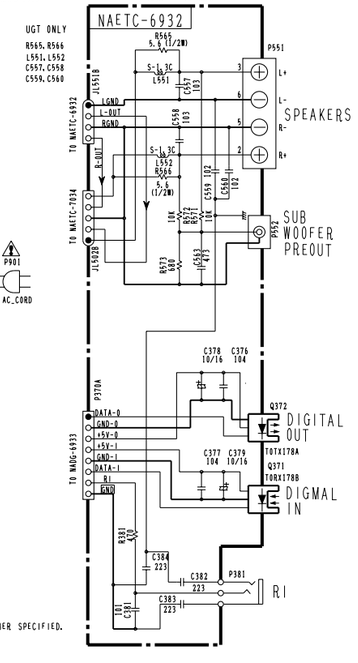
SCHEMATIC DIAGRAM (AMPLIFIER SECTION)











CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH FUSE OF SAME TYPE AND RATING INDICATED.

ATTENTION
AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE ET CALIBRATION COMME INDIQUE.

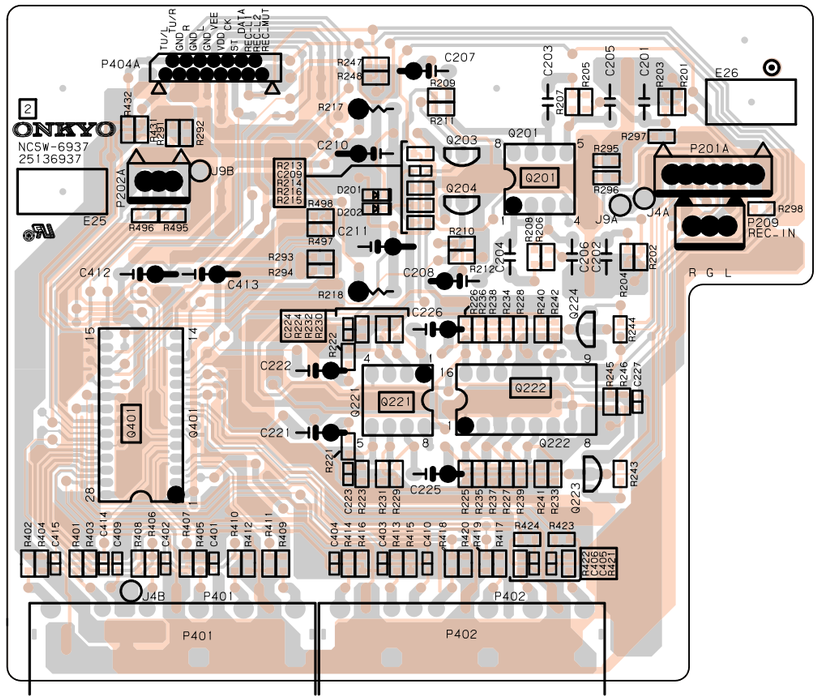
THIS SYMBOL LOCATED NEAR THE FUSE INDICATES THAT THE FUSE USED IS SLOW OPERATING TYPE FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE WITH SAME TYPE FUSE. FOR FUSE RATING REFER TO THE MARKING ADJACENT TO THE SYMBOL.

CE SYMBOLE INDIQUE QUE LE FUSIBLE UTLISE EST E LENT. POUR UNE PROTECTION PERMANENTE, N'UTILISER QUE DES FUSIBLES DE MEME TYPE. CE DARNIER EST INDIQUE LA QU LE PRESENT SYMBOL EST APPOSE.

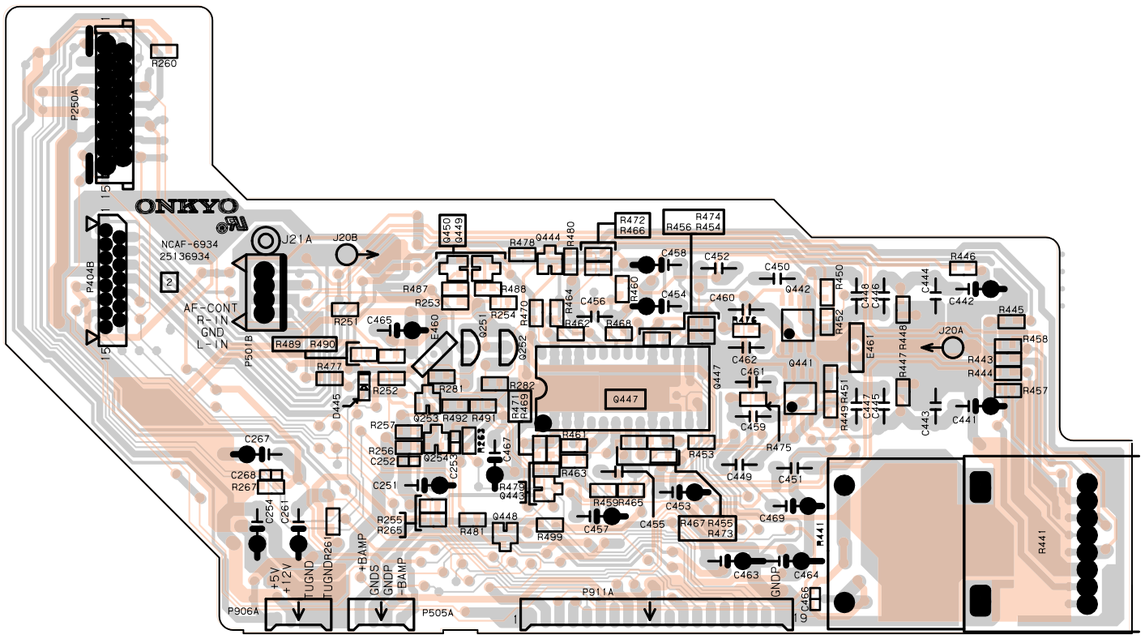
NOTE
- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE(MEASURED WITH VOLTMETER) ⟨ ⟩ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (─|(─) ARE IN μF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED.
  EX) 030=3pF 330=33pF 331=330pF 333=0.033μF
- ALL RESISTORS ARE IN OHMS 1/4WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES ON PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
  EX) ○○○ PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

PRINTED CIRCUIT BOARD VIEW 1

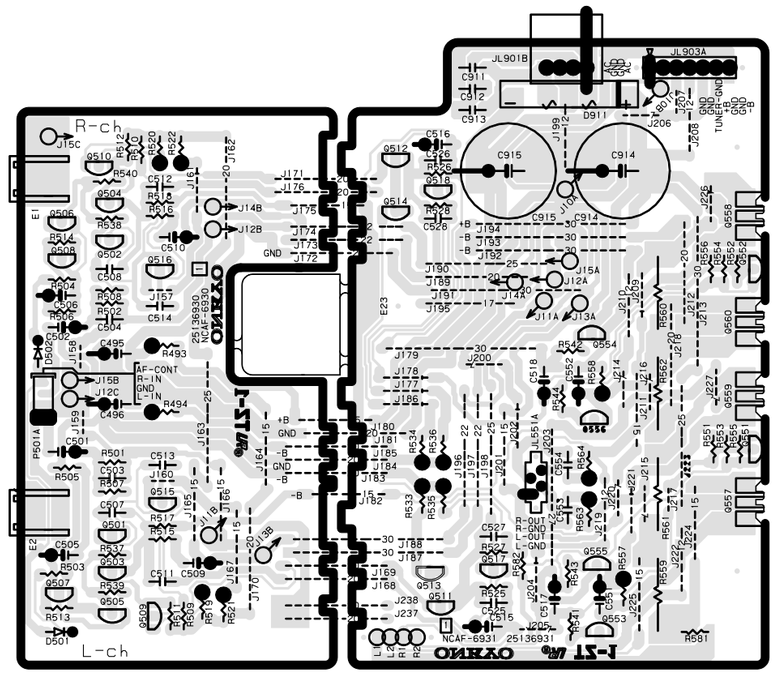
U10 SELECTOR CIRCUIT PC BOARD (NASW-6937)



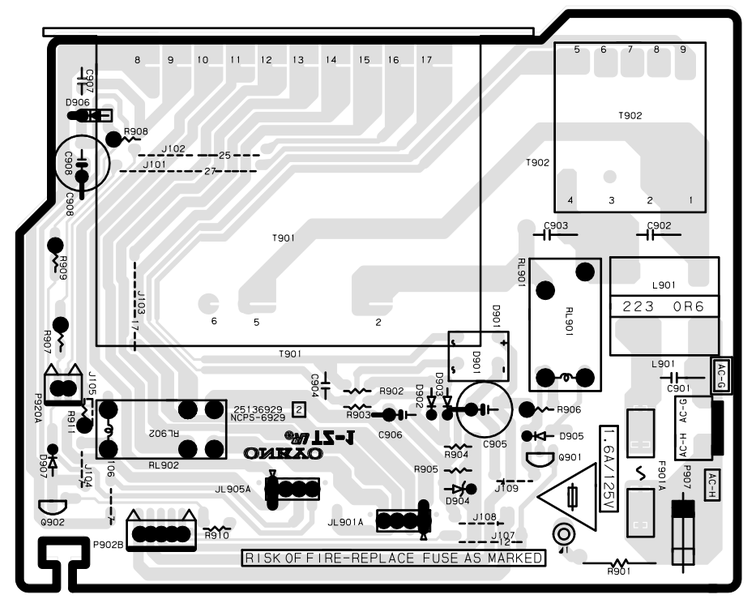
U7 ACOUSTIC CIRCUIT PC BOARD (NAAF-6934)



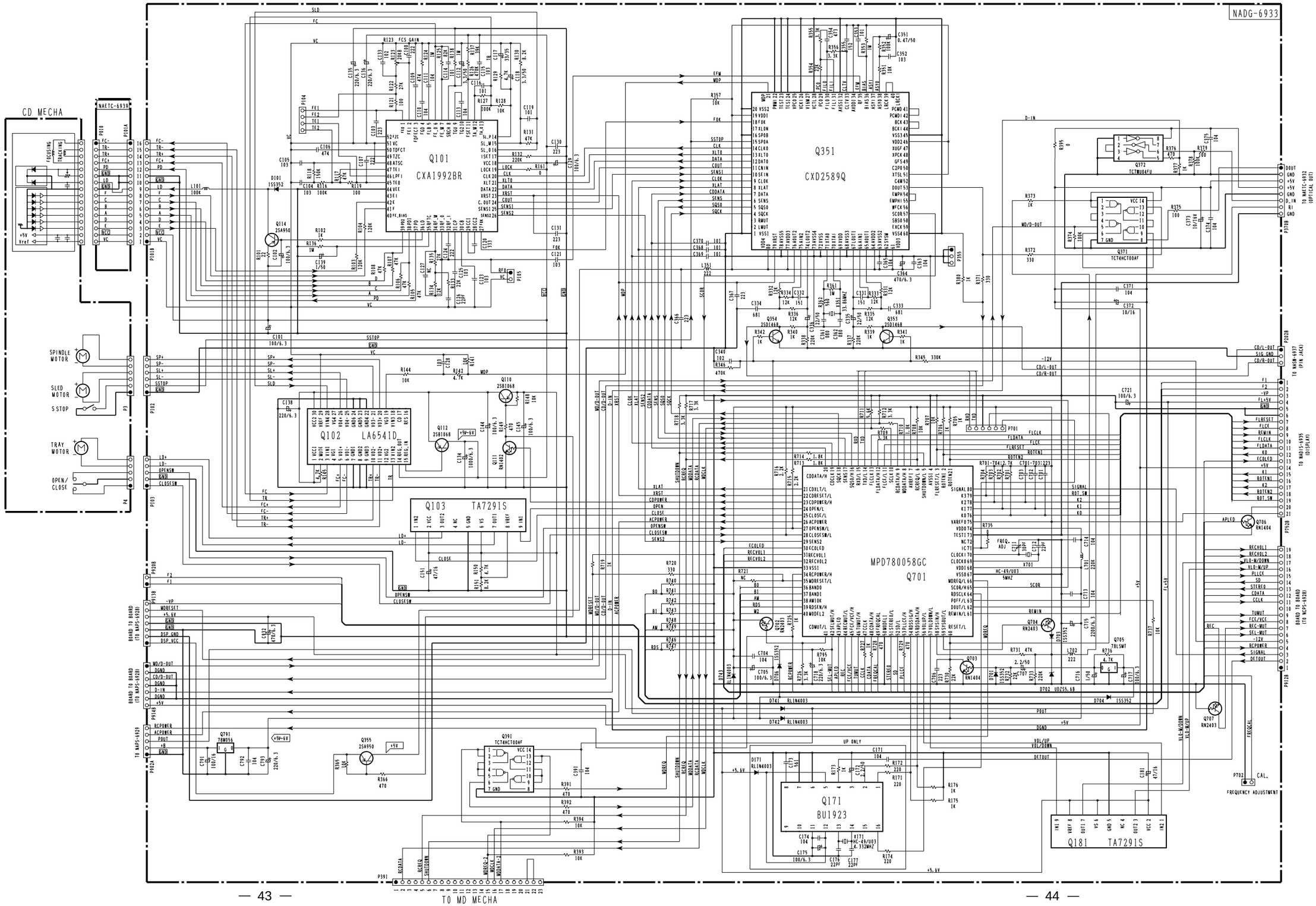
U3 POWER AMPLIFIER CIRCUIT PC BOARD (NAAF-6930)



U2 PRIMARY CIRCUIT PC BOARD (NAPS-6929)

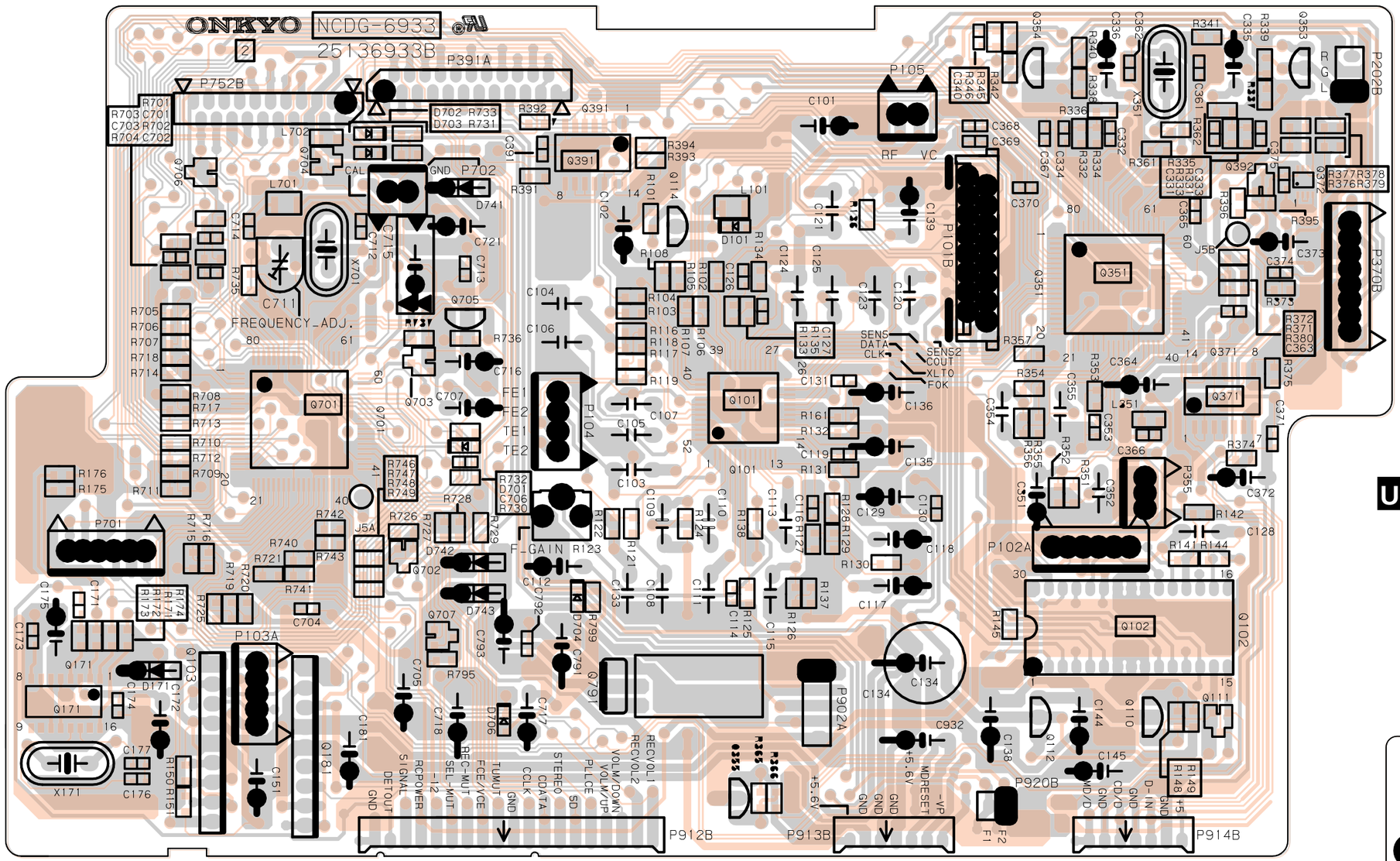


SCHEMATIC DIAGRAM(CD&MICROPROSSEOR SECTION)

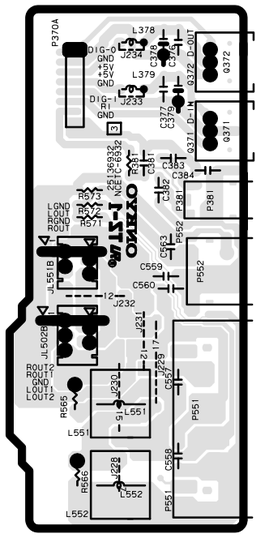


PRINTED CIRCUIT BOARD VIEW 2

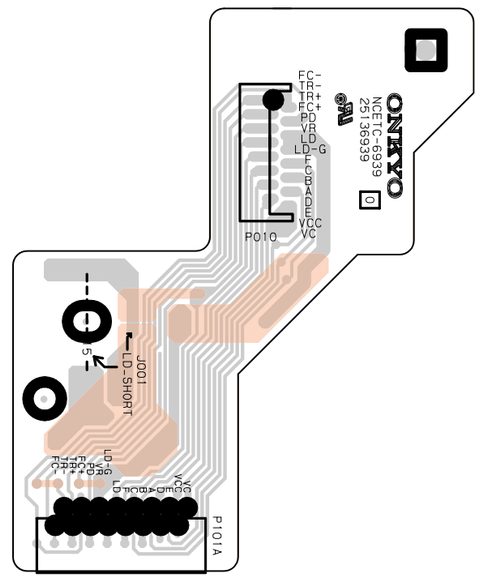
U6 MICROPROCESSOR & CD CIRCUIT PC BOARD (NADG-6933)



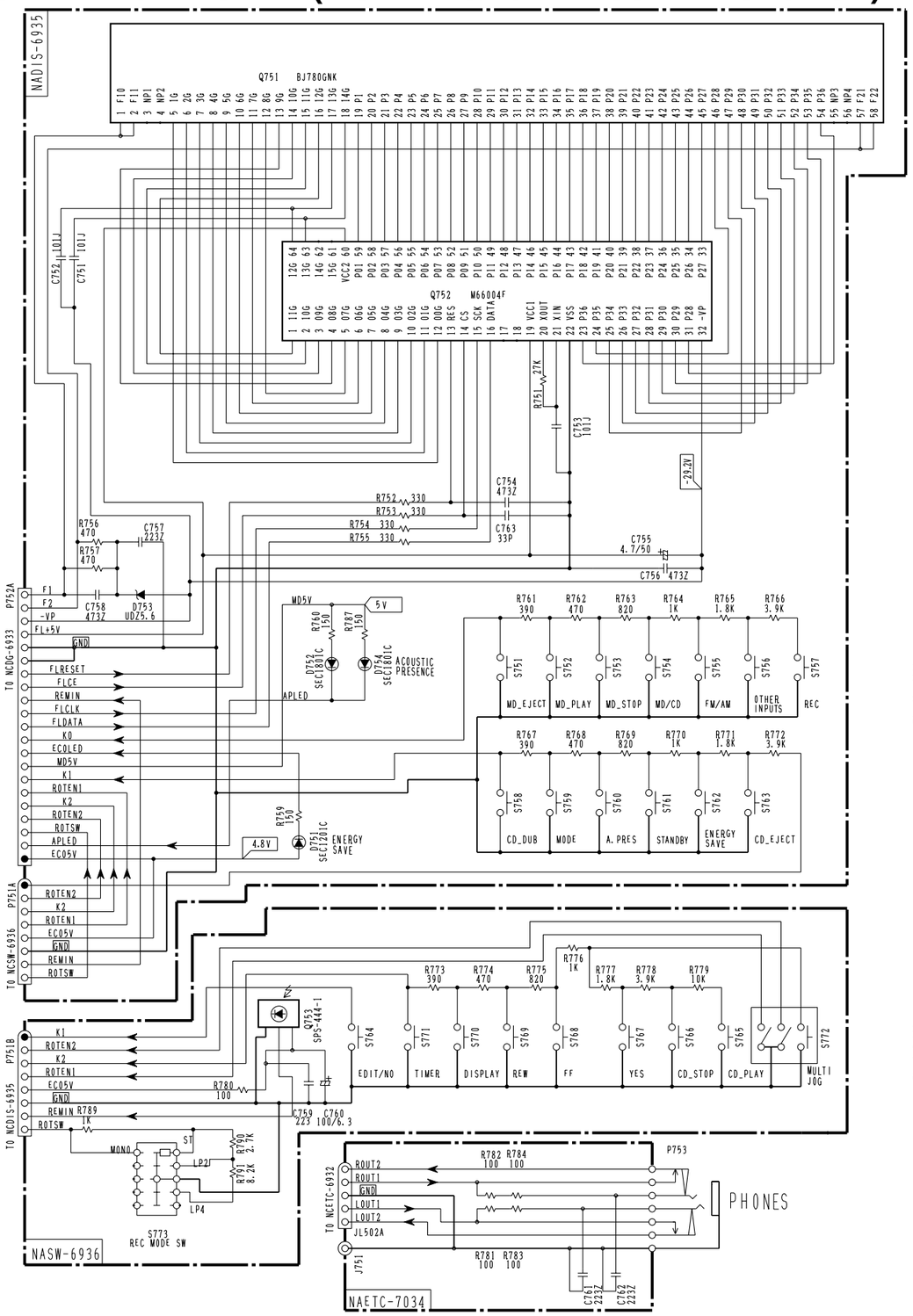
U4 SPEAKER TERMINAL PC BOARD (NAETC-6932)

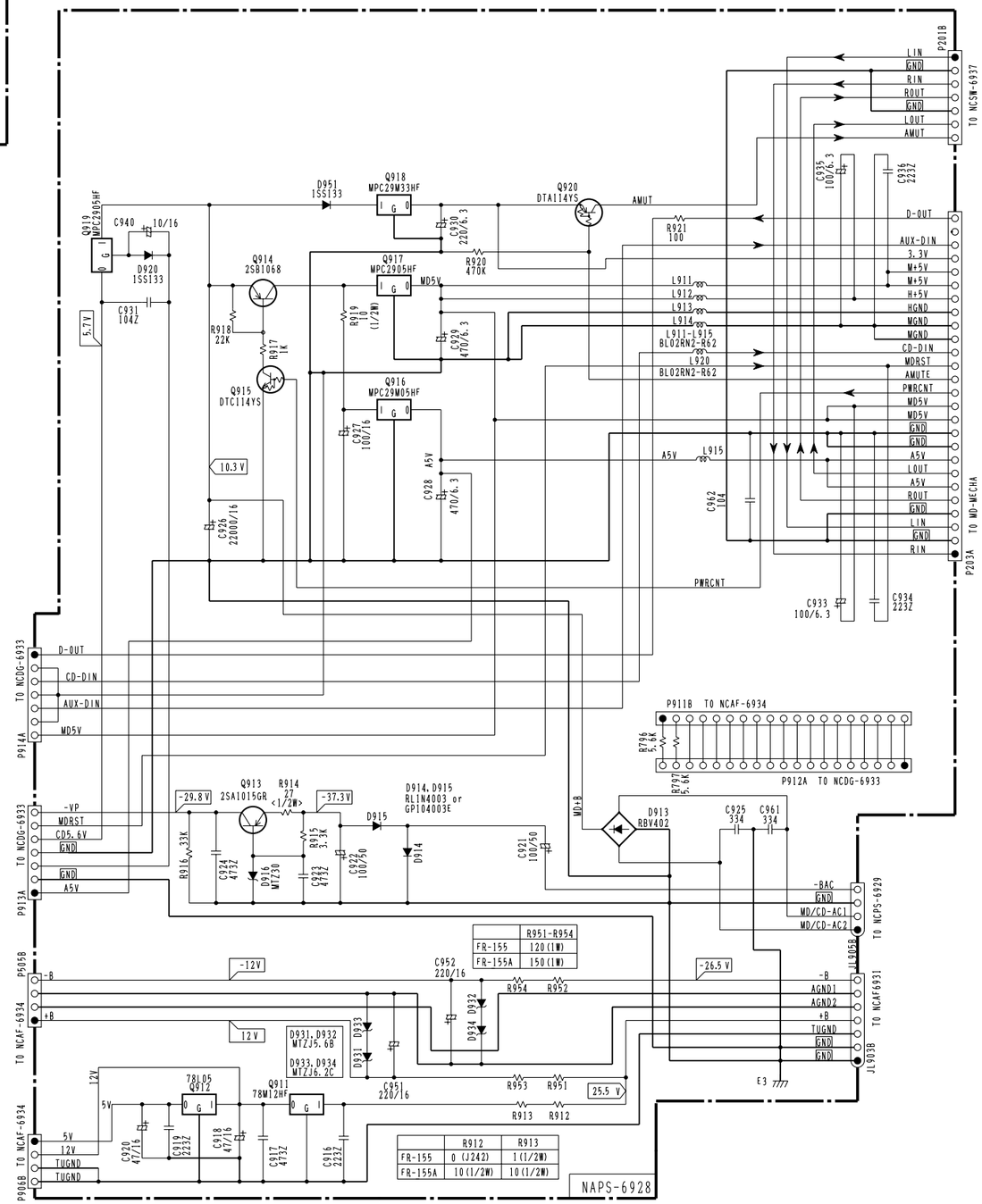


U12 CD CONNECTOR PC BOARD (NAETC-6939)



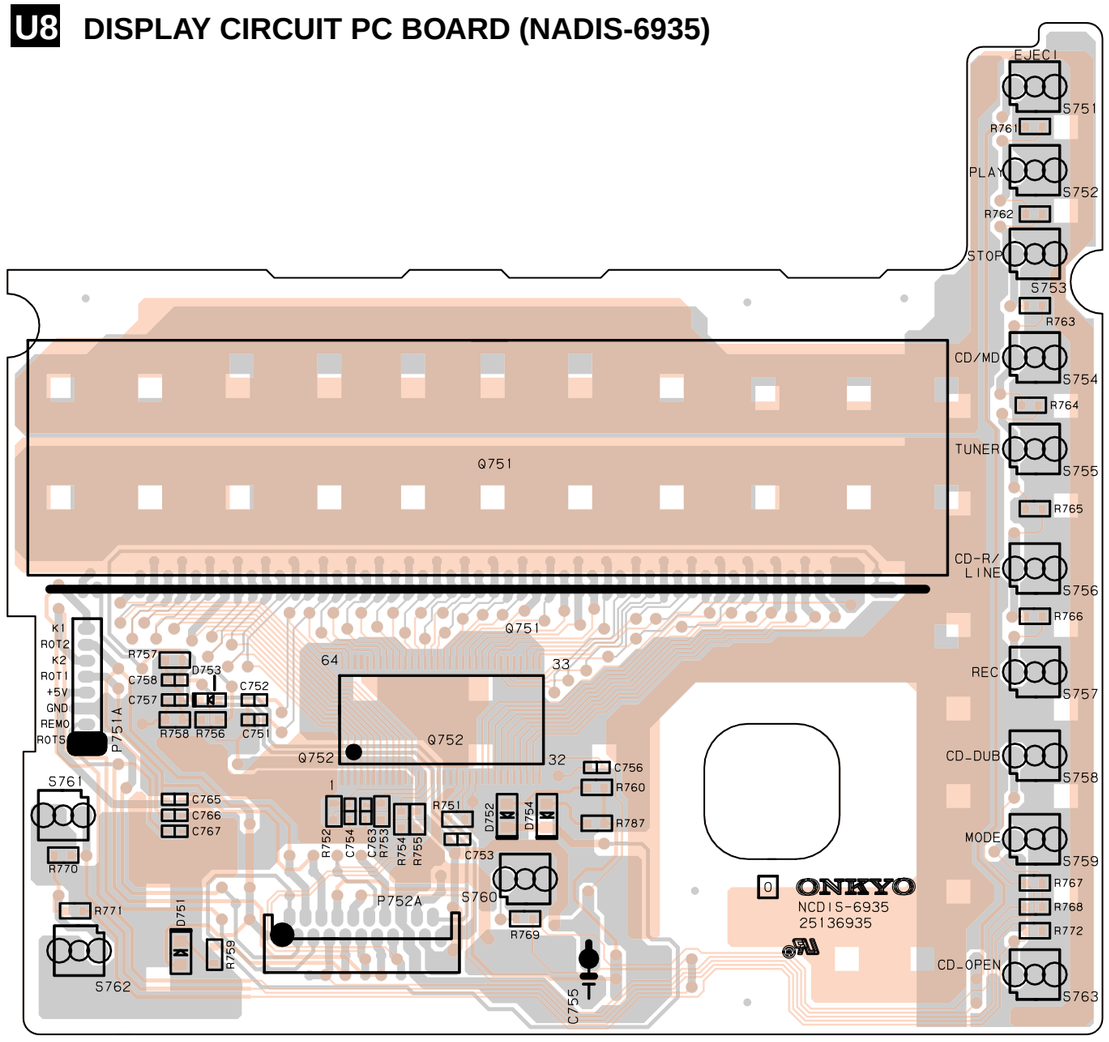
SCHEMATIC DIAGRAM (DISPLAY &POWER SUPPLY SECTION)



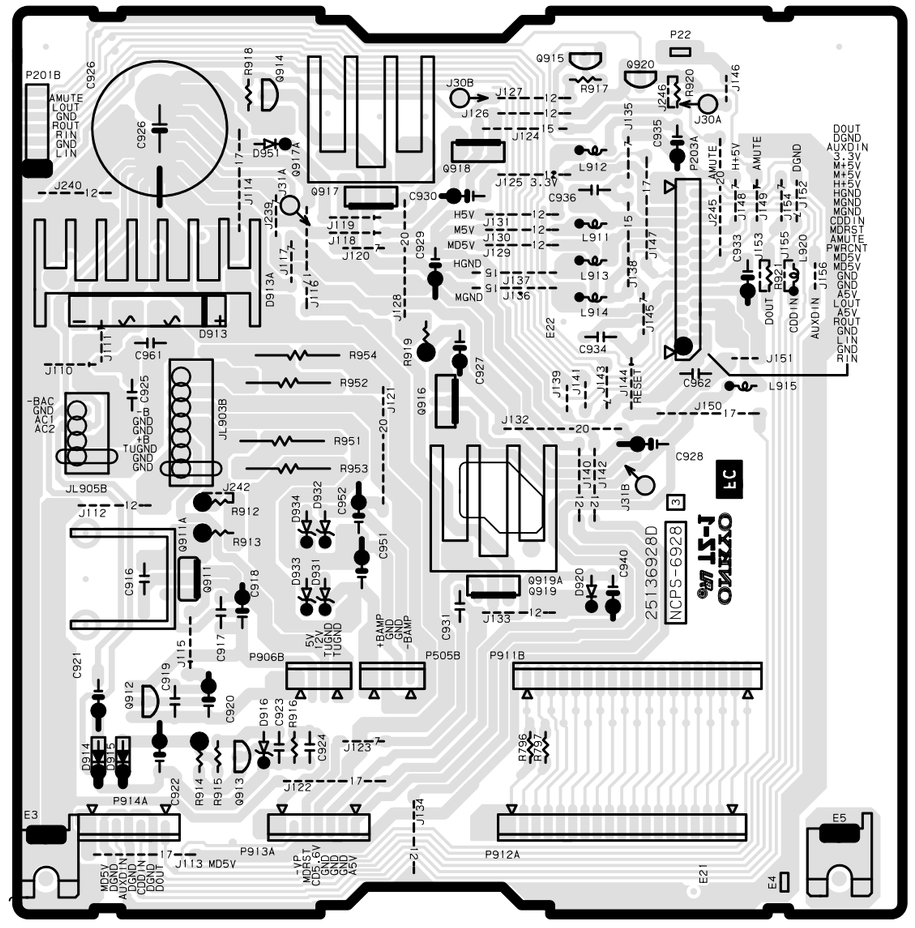


PRINTED CIRCUIT BOARD VIEW 3

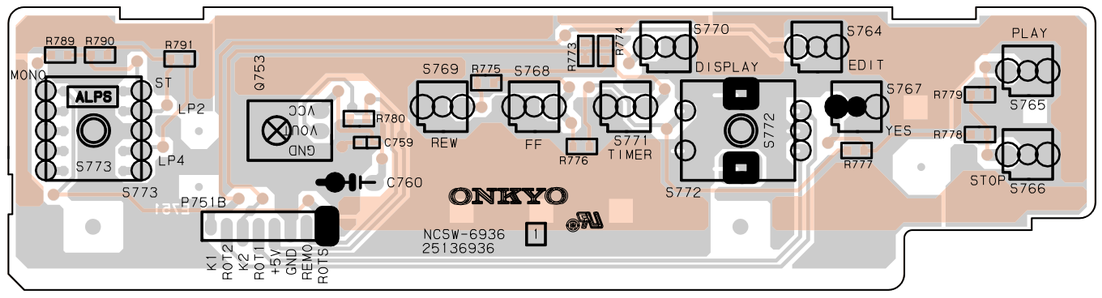
U8 DISPLAY CIRCUIT PC BOARD (NADIS-6935)



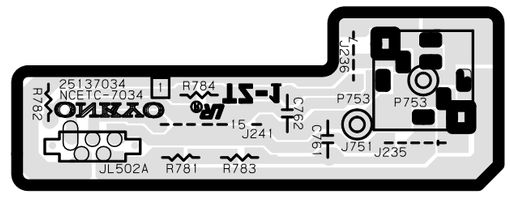
U1 POWER SUPPLY CIRCUIT PC BOARD (NAPS-6928)



U9 CONTROL SWITCH PC BOARD (NASW-6936)



U5 HEADPHONE JACK PC BOARD (NAETC-7034)



FR-155

PRINTED CIRCUIT BOARD PARTS LIST

POWER SUPPLY CIRCUIT PC BOARD(NAPS-6928-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q911	222780125JRC or	NJM78M12FA or
	222780125NEC	MPC78M12HF
Q912	222780053	78L05
Q916	22278005ENEC	MPC29M05HF
Q917, Q919	22278005DNEC	MPC2905HF
Q918	22278033ENEC	MPC29M33HF
	Transistors	
Q913	2211455	2SA1015-GR
Q914	2212853 or	2SB1068-K or
	2212855	2SB1068-U
Q915	221281 or	DTC114YS or
	2213570	RN1207
Q920	2213090 or	DTA114YS or
	2213590	RN2207
	Diodes	
D913	22380271 or	D3SBA20 or
	22380022	RBV402
D914,D915	22380260 or	RL1N4003 or
	22380032 or	1SR139-100 or
	22380035	GP104003E
D916	224473004	MTZJ30D,Zener
D920,D951	223163 or	1SS133 or
	223205	1SS270A
D931,D932	224470562	MTZJ5.6B,Zener
D933,D934	224470623	MTZJ6.2C,Zener
	Coils	
L911~L915,L920	230906	BL02RN2-R62
	Capacitors	
C918,C920	393344707	47 μF, 16 V, Elect.
C921,C922	393381017	100 μF, 50 V, Elect.
C925,C961	374723344	0.33 μF ±5 %, 50 V, Plastic
C926	3504348	22000 μF, 16 V, Elect.
C927	393341017	100 μF, 16 V, Elect.
C928,C929	393324717	470 μF, 6.3 V, Elect.
C930	393322217	220 μF, 6.3 V, Elect.
C933,C935	393321017	100 μF, 6.3 V, Elect.
C940	393341007	10 μF, 16 V, Elect.
C951,C952	393342217	220 μF, 16 V, Elect.
	Resistors	
R911	4500252	0.1 Ω ±5 %, 1/2 W, Metal
R913	453530104	1 Ω ±5 %, 1/2 W, Metal
R914	443522704	27 Ω ±5%, 1/2 W, Metal oxide
R919	443521004	10 Ω ±5%, 1/2 W, Metal
R951-R954	442621214F	120 Ω ±5%, 1 W, Metal oxide
	Sockets	
JL903B	25050271	NSCT-7P99
JL905B	25050268	NSCT-4P96
P201B	2009990630	NSAS-14P0865
P203A	25052326	NSCT-26P2223
	Plugs	
P505B,P906B	25055804	NPLG-4P760
P911B,P912A	25055808	NPLG-19P764
P913A,P914A	25055703	NPLG-7P659
	Heatsink	
D913A	27160271	RAD-083
Q911A	27160211-1	RAD-68
Q917A	27160472	RAD-141
Q919A	27160471	RAD-140
	Screws	
Q917B,Q919B	82143010	3P+10FN(BC)
D913B,Q911B	82143010	3P+10FN(BC)
	Holder	
E21	27190540-1	Holder

PRIMARY CIRCUIT PC BOARD(NAPS-6929-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q501-Q504	2211733	2SC1845-E
Q505-Q508	2213284	2SC1740S-R
Q509,Q510	2211455	2SA1015-GR
Q511,Q512	2211455	2SA1015-GR
Q513,Q514	2211255	2SC1815-GR
Q515,Q516	2211455	2SA1015-GR
Q517,Q518	2211255	2SC1815-GR
Q551,Q552	2213284	2SC1740S-R
Q553,Q554	2211654 or	2SC2235-Y or
	2211653	2SC2235-O
Q555,Q556	2211644 or	2SA965-Y or
	2211643	2SA965-O
	Diodes	
D901	22380039	1D4B42
D902,D903	223163 or	1SS133 or
	223205	1SS270A
D904	224470512	MTZJ5.1B,Zener
D905,D907	223163 or	1SS133 or
	223205	1SS270A
D906	22380260 or	RL1N4003 or
	22380032 or	1SR139-100 or
	22380035	GP104003E
	Coils	
L901	231287 or	⚠ NCH-3567 or
	231252	⚠ NCH-3489
T902	2301464	⚠ NPT-1398D<DT>
	2301465	⚠ NPT-1398G<GT>
	Capacitors	
C901,C902	3500077 or	⚠ DE7150F-472M or
	3300030	⚠ DE1307E472M-KH
C903	3500196S	⚠ RE275V-103M
C904,C907	374724734	0.047 μF 5 %, 50 V, Elect.
C905,C908	393344717	470 μF, 16 V, Elect.
C906	393341007	10 μF, 16 V, Elect.
	Resistors	
R901	431533355	⚠3.3 MΩ , 1/2 W, Solid <DT>
R906	443523904	39 Ω ±5 %, 1/2 W, Metal oxide
R907,R908	453530224	2.2 Ω ±5 %, 1/2 W, Metal
R909,R914	443522704	27 Ω ±5 %, 1/2 W, Metal oxide <DT>
	Relays	
RL901	25065601 or	NRL-1P5A-DC9-150 or
	25065603	NRL-1P5A-DC9-152
RL902	25065582 or	NRL-2P5A-DC18-138 or
	25065605	NRL-2P5A-DC18-154
	Fuse holder	
F901A	25050065	⚠YSH403T
	Sockets	
JL901A	25051108	NSCT-4P895
JL905A	25051108	NSCT-4P895
	Plugs	
P902B	25055369	NPLG-5P352
P907	25055675	NPLG-2P631
P920A	25055146	NPLG-2P130
	Fuse label	
F901B	29361919	T400MAL250V <GT>
	29362309	1.25 A/125 V <DT>

POWER AMPLIFIER CIRCUIT PC BOARD(NAAF-6930-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q901,Q902	2213640	DTC123JS
	Diodes	
D501,D502	223163 or	1SS133 or
	223205	1SS270A or
D911	22380271F or	D3SBA20 or
	22380022F	RBV402
	Capacitors	
C495,C496	393361017	100 μF, 35 V, Elect.
C501,C502	393342207	22 μF, 16 V, Elect.
C503,C504	374721015	100 pF ±10 %, 50 V, Plastic
C505,C506	393344707	47 μF, 16 V, Elect.
C509,C510	393322217	220 μF, 6.3 V, Elect.
C517,C518	393341007	10 μF, 16 V, Elect.
C525,C526	374721015	100 pF ±10 %, 50 V, Plastic
C551,C552	393341007	10 μF, 16 V, Elect.
C553,C554	374724734	0.047 μF ±5 %, 50 V, Plastic
C912,C913	374722244	0.22 μF ±5 %, 50 V, Plastic
C914,C915	354763329S	3300 μF, 35 V, Elect.
	Resistors	
R493,R494	443522204	22 Ω ±5 %, 1/2 W, Metal oxide
R519-R522	443523904	39 Ω ±5 %, 1/2W, Metal oxide
R533,R534	443523304	33 Ω ±5 %, 1/2W, Metal oxide
R535,R536	443523904	39 Ω ±5 %, 1/2W, Metal oxide
R557,R558	443528204	82 Ω ±5 %, 1/2W, Metal oxide
R559-R562	452732294F	0.22 Ω ±5 %, 1/2W, Metal
R563,R564	453630824	8.2 Ω ±5 %, 1W, Metal
	Sockets	
JL551A	25051088	NSCT-4P875
JL901B	25050281	NSCT-4P109
JL903A	25051111	NSCT-7P898
P501A	2009990622UL	NSAS-8P0852
	Holder	
E23	27190608-1	UA-0 V0

SPEAKER TERMINAL PC BOARD(NAETC-6932-1B/1C)

	Photo couplers	
Q371	24120037	TORX178B
Q372	24120031	TOTX178A
	Coils	
L551,L552	231176S	S-1.3C <GT>
	Capacitors	
C378,C379	393341007	10 μF, 16 V, Elect.
C557,C558	374721034	0.01 μF ±5 %, 50 V, Plastic <GT>
C563	374724734	0.047 μF±5 %, 50 V, Plastic
	Resistors	
R565,R566	443520564	5.6 Ω ±5 %, 1/2 W, Metal <GT>
	Jacks	
P381	25045504	NPJ-1PDBL319
P552	25045567	NPJ-1PDBL382
	Terminal	
P551	25060161	NTM-4PDML087,Speakers
	Sockets	
JL502B	25051089	NSCT-5P876
JL551B	25051088	NSCT-4P875
P370A	2009990621	NSAS-16P0851

MICROPROCESSOR AND CD CIRCUIT PC BOARD (NADG-6933-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q101	22241499R3	CXA1992BR
Q102	22241247	LA6541D
Q103,Q181	22240239	TA7291S
Q351	22241500R3	CXD2589Q
Q371,Q391	222740007R2TO	TC74HCT00AF
Q372	22240935R2	TC7WU04FU
Q701	22241514R3	MPD780058GC-206-8BT
Q705	22241210	BMR-0101D
Q791	222780565JRC	NJM78M56FA
	Transistors	
Q110,Q112	2212853 or	2SB1068-K or
	2212855	2SB1068-U
Q111	2214470R2	RN1402
Q114,Q355	2211504 or	2SA950-Y or
	2211503	2SA950-O
Q353,Q354	2215024 or	2SD1468S-R or
	2212794	2SD1468-R
Q702,Q704,Q707	2214540R2	RN2403
Q703,Q706	2214490R2	RN1404
	Diodes	
D101,D701	223234R2 or	1SS352 or
	223269R2	1SS355
D202	224490510R2 or	UDZ5.1B or
	224550510R2	UDZS5.1B,Zener
D702	224490560R2 or	UDZ5.6B or
	224550560R2	UDZS5.6B,Zener
D703,D704,D706	223234R2 or	1SS352 or
	223269R2	1SS355
D741 -D743	22380260 or	RL1N4003 or
	22380035 or	GP104003E or
	22380032	1SR139-100
	Crystals	
X351	3010325	HC-49U/03 33.8688MHz
X701	3010312	HC-49/U03 5MHz
	Coils	
L101	231237K101R2	NCH-1481
L351,L702	230921R2	BLM21B222SPT
L701	231237K220R2	NCH-1477

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C101,C102	355721019	100 μF, 6.3 V, Elect.
C103	374722234	0.022 μF ±5 %, 50 V, Plastic
C104,C105,C115	374721034	0.01 μF±5 %, 50 V, Plastic
C106,C109	374724744	0.47 μF±5 %, 50 V, Plastic
C107,C108,C124	374722224	2200 pF ±5 %, 50 V, Plastic
C110,C111,C113	374721044	0.1 μF ±5 %, 50 V, Plastic
C112,C118	393380337	3.3 μF, 50 V, Elect.
C117	393363307	33 μF, 3 5 V, Elect.
C120	374723334	0.033 μF ±5 %, 50 V, Plastic
C121,C123,C125	374721034	0.01 μF ±5 %, 50 V, Plastic
C128,C352	374721034	0.01 μF ±5 %, 50 V, Plastic
C129,C144,C145	393321017	100 μF, 6.3 V, Elect.
C133	374721024	1000 pF ±5 %, 50 V, Plastic
C134	393321027	1000 μF, 6.3 V, Elect.
C135,C136,C138	393322217	220 μF, 6.3 V, Elect.
C139,C716	393380107	1 μF, 50 V, Elect.
C151,C181	393344707	47 μF, 16 V, Elect.
C335,C336	393382207	22 μF, 50 V, Elect.
C351	393384797	0.47 μF, 50 V, Elect.
C354	374724734	0.047μF ±5 %, 50 V, Plastic
C355	374721524	1500 pF ±5%, 50 V, Plastic
C364,C932	393324717	470 μF, 6.3 V, Elect.
C372,C373	393341007	10 μF, 16 V, Elect.
C469	393381007	10 μF, 50 V, Elect.
C705,C717,C721	393321017	100 μF, 6.3 V, Elect.
C707	393380227	2.2 μF, 50 V, Elect.
C711	3060016	NTC-30P14, Trimming
C715	3000078	DX-5R5L104,Super capacitor
C718,C793	393322217	220 μF, 6.3 V, Elect.
C755	353780479	4.7 μF, 50 V, Elect.
C791	393341017	100 μF, 16 V, Elect.
	Resistors	
R123	5210263	N06HR20KBC,Trimming
R217,R218	443524714	470 Ω ±5%, 1/2 W, Metal oxide
	Sockets	
P101B	25052212	NSCT-16P2109
P202B	2009990617	NSAS-6P0844
P752B	25052321	NSCT-21P2218
P902A	2002A391010	NSAS-10P0845
P912B	25051530	NSCT-19P1317
P913B,P914B	25051232	NSCT-7P1022
P920B	2002A390410	NSAS-4P0894
	Plugs	
P102A	25055150	NPLG-6P134
P103A	25055149	NPLG-5P133
P104	25055045	NPLG-4P33
P105,P702	25055038	NPLG-2P29
P370B	25055446	NPLG-8P428
P391A	25052323	NSCT-23P2220

ACOUSTIC CIRCUIT PC BOARD (NAAF-6934-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q441,Q442	22240583R2 or 22241383R2	TC51832FL-10 or NJM4565M-D
Q447	22240798	TC9162AN
	Transistors	
Q251,Q252	2215024 or 2212794	2SD1468S-R or 2SD1468-R
Q253,Q448	2214530R2 or 2213144R2	RN2402 or 2SC2712-Y
Q254,Q449	2213145R2 or 2215410R2	2SC2712-GR or RN1441
Q450	2214374R2 or 2214375R2	2SA1162-Y or 2SA1162-GR
	Diodes	
D445	223234R2 or 223269R2	1SS352 or 1SS355
D754	225386R2	SEC1801C, LED
	Capacitors	
C251	393384797	0.47 μF, 50 V, Elect.
C254	393341007	10 μF, 16 V, Elect.
C261,C267,C467	393380337	3.3 μF, 50 V, Elect.
C441,C442	393342207	22 μF, 16 V, Elect.
C443,C444	374721015	100 pF ±10 %, 50 V, Plastic
C447,C448	374721015	100 pF ±10 %, 50 V, Plastic
C449,C452	374726834	0.068 μF ±5 %, 50 V, Plastic
C453,C454	393344707	47 μF, 16 V, Elect.
C455,C456	374721534	0.015 μF ±5 %, 50 V, Plastic
C457,C458	393380227	2.2 μF, 50 V, Elect.
C459,C460	374721544	0.15 μF ±5 %, 50 V, Plastic
C461,C462	374721015	100 pF ±10 %, 50 V, Plastic
C463,C464	393342217	220 μF, 16 V, Elect.
C465	393321017	100 μF, 6.3 V, Elect.
	Resistor	
R441	5104478	N16RGL50KBT20F,Volume
	Sockets	
P250A	25052211	NSCT-15P2108
P404B	25052315	NSCT-15P2212
	Plugs	
P501B	25055442	NPLG-4P424
P505A,P906A	25051526	NSCT-4P1313
P911A	25051530	NSCT-19P1317

DISPLAY CIRCUIT PC BOARD (NADIS-6935-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	FL tube	
Q751	212211	BJ780GNK
	ICs	
Q752	22240685R9	M66004FP
	LED	
D751	225385R2	SEC1201C
D752	225386R2	SEC1801C
	Diodes	
D753	224490560R2 or	UDZ5.6B or
	224550560R2	UDZS5.6B,Zener
	Sockets	
P751	200AE391615A	NSAS-16P0869
P752A	25052358	NSCT-21P2255
	Push switchs	
S751-S763	25035652	NPS-111-S604

CONTROL SWITCH PC BOARD (NASW-6936-1B/1C)

	Remote Sensor	
Q753	241335	SPS-444-1
	Capacitor	
C760	355721019	100 μF, 6.3 V, Elect.
	Push switchs	
S764-S771	25035652	NPS-111-S604
	Rotary encoder	
S772	25065507	EC11B15244,Jog
	Rotary switch	
S773	25030417	NRSF-119-06SRB, Rec mode
	Holder	
E751	27190540-1	Holder

SELECTOR CIRCUIT PC BOARD (NASW-6937-1B/1C)

	ICs	
Q201-Q221	22240191	NJM4565D-D
Q222	222840521TOS	TC4052BP
Q401	22240864	TC9273N-004
	Transistors	
Q203,Q204	2215024 or	2SD1468S-R or
	2212794	2SD1468-R
Q223,Q224	2215024 or	2SD1468S-R or
	2212794	2SD1468-R
	Diode	
D201	224490510R2 or	UDZ5.1B or
	224550510R2	UDZS5.1B,Zener
	Capacitors	
C201-C204	374722224	2200 pF±5 %, 50 V, Plastic
C205,C206	374721815	180 pF±5 %, 50 V, Plastic
C207,C208	393344707	47 μF, 16 V, Elect.
C210,C211	393341017	100 μF, 16 V, Elect.
C221,C222	393380107	1 μF, 50 V, Elect.
C225,C226	393380477	4.7 μF, 50 V, Elect.
C412,C413	393341017	100 μF, 16 V, Elect.
	Jacks	
P401	25045300 or	NPJ-6PDBL159 or
	25045571	NPJ-6PDRW386
P402	25045300 or	NPJ-6PDBL159 or
	25045571	NPJ-6PDRW386
	Socket	
P404A	25052315	NSCT-15P2212
	Plugs	
P201A	25055445	NPLG-7P427
P202A	25055441	NPLG-3P423
P209	25055042	NPLG-3P32

CD CONNECTOR PC BOARD (NAETC-6939-1B/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Sockets	
P010	25052483	NSCT-16P2380
P101A	25052249	NSCT-16P2146

HEADPHONE JACK PC BOARD(NAETC-7034-1B/1C)

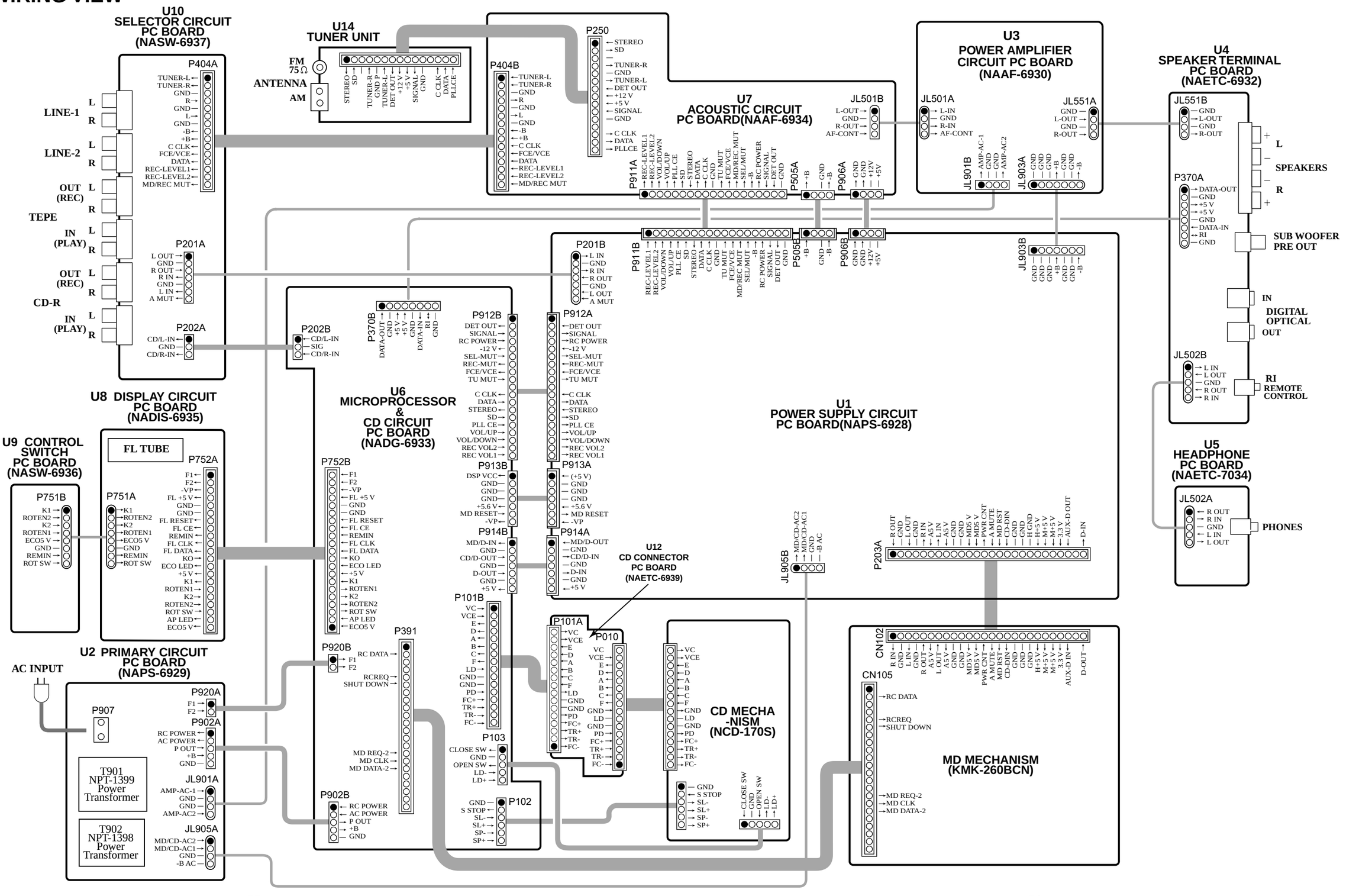
	Jack	
P753	25045396	LGT1516-0101,Phones
	Socket	
JL502A	25051089	NSCT-5P876

NOTE :

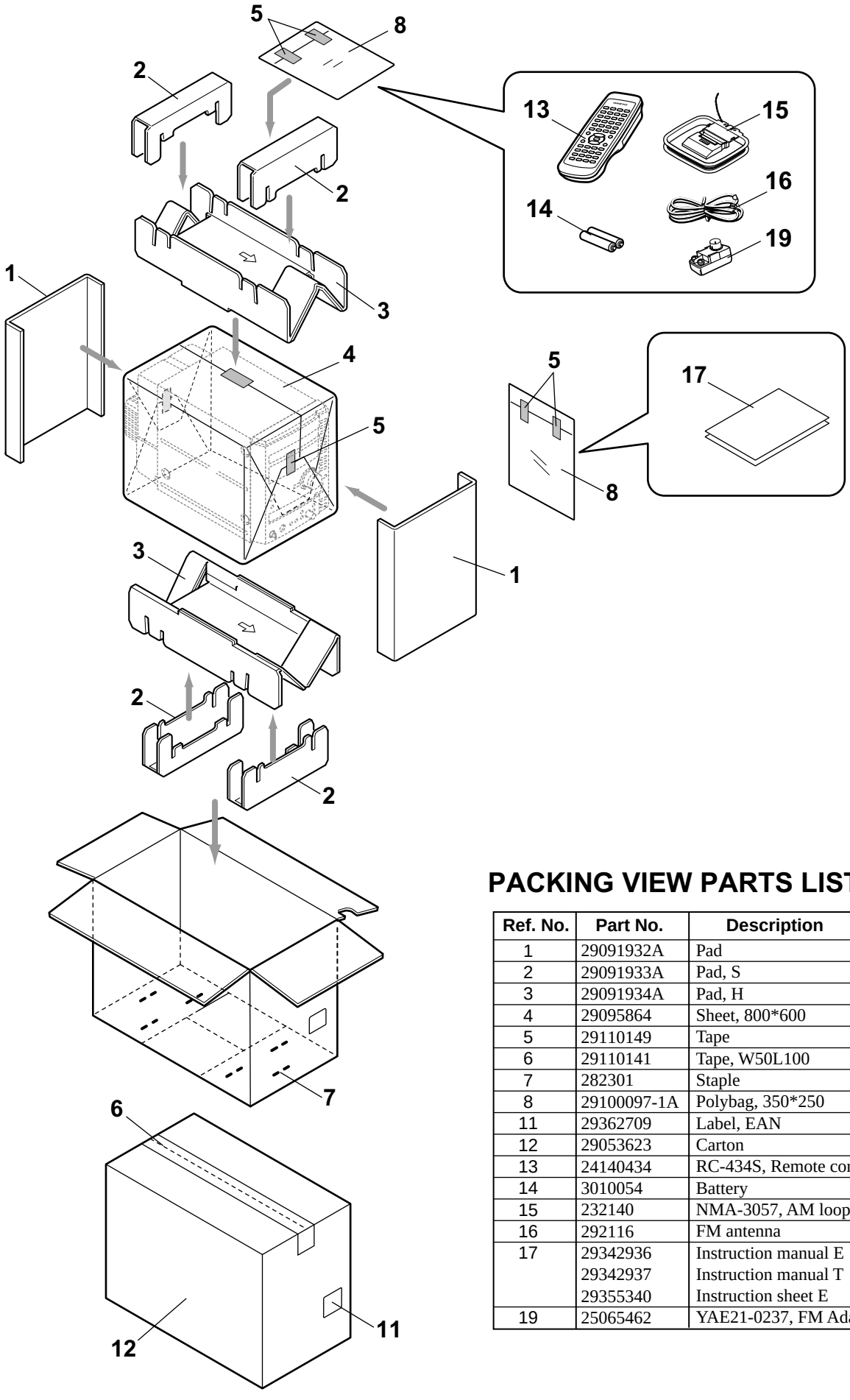
<DT> : Taiwanese Model only
<GT> : Asian Model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

WIRING VIEW


U10
SELECTOR CIRCUIT
PC BOARD
(NASW-6937)
LINE-1
LINE-2
OUT (REC)
TEPE
IN (PLAY)
OUT (REC)
CD-R
IN (PLAY)
P404A
P201A
P202A
U14
TUNER UNIT
FM 75Ω
ANTENNA
AM
P404B
P250
U7
ACOUSTIC CIRCUIT
PC BOARD(NAAF-6934)
JL501B
U3
POWER AMPLIFIER
CIRCUIT PC BOARD
(NAAF-6930)
JL501A
JL551A
JL901B
JL903A
U4
SPEAKER TERMINAL
PC BOARD
(NAETC-6932)
JL551B
P370A
L
SPEAKERS
R
SUB WOOFER
PRE OUT
IN
DIGITAL
OPTICAL
OUT
JL502B
RI
REMOTE
CONTROL
P911A
P505A
P906A
P911B
P505B
P906B
JL903B
P201B
P912B
P912A
P370B
P202B
U6
MICROPROCESSOR
&
CD CIRCUIT
PC BOARD
(NADG-6933)
U1
POWER SUPPLY CIRCUIT
PC BOARD(NAPS-6928)
U8 DISPLAY CIRCUIT
PC BOARD
(NADIS-6935)
U9 CONTROL
SWITCH
PC BOARD
(NASW-6936)
FL TUBE
P751B
P751A
P752A
P752B
P913B
P913A
P914B
P914A
U12
CD CONNECTOR
PC BOARD
(NAETC-6939)
JL905B
P203A
U5
HEADPHONE
PC BOARD
(NAETC-7034)
JL502A
PHONES
AC INPUT
U2 PRIMARY CIRCUIT
PC BOARD
(NAPS-6929)
P907
P920A
P902A
T901
NPT-1399
Power
Transformer
T902
NPT-1398
Power
Transformer
JL901A
JL905A
P391
P920B
P902B
P101B
P101A
P010
P103
P102
CD MECHA
-NISM
(NCD-170S)
CN102
CN105
MD MECHANISM
(KMK-260BCN)

PACKING VIEW



PACKING VIEW PARTS LIST

Ref. No.	Part No.	Description
1	29091932A	Pad
2	29091933A	Pad, S
3	29091934A	Pad, H
4	29095864	Sheet, 800*600
5	29110149	Tape
6	29110141	Tape, W50L100
7	282301	Staple
8	29100097-1A	Polybag, 350*250
11	29362709	Label, EAN
12	29053623	Carton
13	24140434	RC-434S, Remote controller
14	3010054	Battery
15	232140	NMA-3057, AM loop antenna
16	292116	FM antenna
17	29342936 29342937 29355340	Instruction manual E Instruction manual T Instruction sheet E
19	25065462	YAE21-0237, FM Adapter

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